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ABSTRACT

One of a series offering practical advice and information on distance teaching, this broadsheet focuses on the ways in which distance teaching can support, expand, and change secondary education. Traditional criticisms of secondary schools are examined, including their irrelevancy, inefficiency, and inequity. Issues of distance education curriculum, expansion, and quality are first viewed by considering the ideas of several visionary reformers: (1) Henry Morris, who reorganized education in Cambridgeshire; (2) Francisco Villen Lucena, who set up Radio ECCA in the Canary Islands; (3) H. Rex Lee, who saw television as a tool to reform education in American Samoa; (4) the National Christian Council of Kenya, who developed village polytechnics; and (5) Patrick van Rensburg, who established the Brigade movement in Botswana. Three models for providing face-to-face support for distance education programs are examined, with specific examples based on the type of program involved, i.e., students working primarily at home, alternative schools which use mass media to offer secondary qualifications, or use of mass media to raise educational quality within a school. Examples describe face-to-face support systems for each model. Summary statements on the successes and failures of distance education, conclusions, and a 34-item reference list are included. (LMM)

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Secondary education at a distance

Hilary Perraton

IR011227

International Extension College 1983

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The International Extension College

The International Extension College exists to provide information and advice on distance teaching: a technique of education combining the use of printed material, broadcasts and face-to-face tuition. IEC is particularly interested in the use of distance teaching for nonformal and rural education. It is a nonprofit organisation registered as a charity under English law, and has links with the National Extension College and the Department of Education in Developing Countries of the University of London Institute of Education.

IEC works with governments and universities in third world countries to provide information, consultancy and training for distance-teaching projects. At the request of the governments concerned, we have started colleges in Mauritius, Botswana and Lesotho, and worked with the University of Lagos, Nigeria, in establishing a Correspondence and Open Studies Unit.

The literature on distance teaching is growing, but it is often hard to find. As a result, educators planning to use correspondence and broadcast teaching to stretch resources and increase opportunities have little chance of benefiting from the experience of others. IEC's *Broadsheets on distance learning* give practical advice and information in the use of distance teaching, drawn mainly from experience in the third world. They focus on rural education, on the techniques of distance teaching, and on case studies of distance-teaching projects. A list of titles in the series will be found on the last page of this *Broadsheet*.

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Chapter 1: The problem

Secondary education is not fashionable. Over the last few years, debate about education, in rich countries and in poor, has concentrated on primary or basic education and on universities. International agencies like the World Bank have switched their attention from higher to basic education without focusing it as critically on secondary schools in between. Critics have directed their fiercest attack at secondary schools where 'Qualifications-earning is ritualistic, tedious, suffused with anxiety and boredom, destructive of curiosity and imagination, in short anti-educational' (Dore in Simmons 1980, p.69).

But that is the view of critics and consultants. Parents and children see things differently. While the statistics may show that only 20 of each 100 who enter secondary school make it through to the end and on to the next stage, all parents and many children believe against the odds that they will be in the lucky 20, not the unlucky 80. And if they are, despite worries about unemployment of school leavers, their persistence will be rewarded. In many poor countries they are still likely to earn more than twice as much as their brothers and sisters who went only to primary school. For economic man, for the rational calculating peasant farmer, it still makes sense to send children to secondary school if at all possible.* The urban elites, who actually make the educational decisions in most countries, also want to maintain and expand the secondary schools to which their children will go. The demand for secondary education is as great as ever.

That demand is likely to increase. Over the last decade primary schools have expanded, and the birth rate has remained high in virtually all countries of the third world. Opportunities for those without schooling — and especially for the young without schooling — have contracted. Table 1 shows, for a handful of countries, how primary and secondary schools have expanded over the last twenty years. In many countries primary schools have grown so fast in the last ten years that the demand for more secondary education will press most strongly in the 1980s.

*To avoid clumsiness, I have used the term 'man' and the pronoun 'he' throughout. Read either as 'person' or 's/he' if you prefer.

At the same time secondary education has faced formidable criticisms over the last few years. We shall sketch out some of them as they form the background to any discussion of how secondary education might be done differently. But we are not analysing them in detail, nor suggesting that some alternative to secondary schools will soon find such ready acceptance that a concentration on developing, improving or expanding secondary education becomes irrelevant. Secondary education is here to stay. This broadsheet focuses on the ways in which distance teaching can support and expand secondary education as well as changing it. We look therefore at the criticisms of the present structure of secondary education as we might gaze into a crystal ball, in order to see the way in which it may change in the future. And we may be wrong in any of our forecasts.

Efficiency, relevance and equity

Secondary schools have been criticised as inefficient, irrelevant and inequitable. The contemporary criticisms of efficiency come from two directions. First, it is clear that many schools are not efficient by their own criteria — they are not internally efficient. They do not succeed in getting all their students successfully through their courses. Substantial numbers drop out on the way or fail their examinations at the end. Second, they are criticised as failing to perform their role in society. Economists have suggested that the value to the economy of passing through secondary school is not commensurate with the cost to society of secondary schooling and have argued for concentrating expenditure more on primary education than on secondary. Employers have argued that secondary schools are not teaching the skills which they demand.

That criticism has much to do with the relevance of the curriculum to the needs of society. For more than a century educators have pressed for a more practical, more vocational, approach to secondary education. They have done so in rich countries as in poor, but have, as Foster (1965) has demonstrated for Ghana, done so with particular strength when considering education in developing countries. It is widely claimed that education at secondary level is geared too closely to the demands of higher education, to which most of its students will not pass, and that it is an unsatisfactory preparation for the jobs to which most of its students will go. The demand for qualifications, or 'diploma disease', aggravates the problem. But change is difficult. Any shift away from the academic curriculum is likely to make the passing of examinations, for those who need them, more difficult. To offer an academic curriculum to some children, and a vocational one to others, is to widen the social distance between the two groups. You get into universities more easily with formal qualifications in conventional

Table 1: Basic educational statistics for selected countries

Country	*Population (millions) 1979*	*Annual growth rate of population (%) 1970-79*	*% of population not of working age (0-14 and 65+) 1979*	*Primary school enrolments as % of age group*		*Secondary school enrolments as % of age group*	
				1960	*1978*	*1960*	*1978*
Brazil	116.5	2.2	45	95	88	11	24
Colombia	26.1	2.3	41	77	124	12	43
India	659.2	2.1	44	61	79	20	28
Kenya	15.3	3.4	52	47	99	2	18
Malaysia	13.1	2.2	45	96	94	19	48
Nigeria	82.6	2.5	50	36	67	4	13
Low income countries (GNP below $380 per head)	2260.2	2.1	41	76	83	14	36
Middle income countries (GNP $380-4400 per head)	985.0	2.4	45	79	95	16	41
United Kingdom	55.9	0.1	36	92	106	66	83
USSR	264.1	0.9	34	100	97	49	72

Source: World Bank (1981).

subjects than with practical skills in unconventional ones.

Many are called but few are chosen. While secondary schools lead on to riches, and while only a minority of children go on to them, then they are almost bound to be socially divisive. That divisiveness has moved some reformers of secondary education as strongly as the accusations of irrelevance or inefficiency. In the next chapter we shall look at some of the visionaries of education, to see how their hopes can guide secondary reform and improvement. Before that, however, it is necessary to make the case for using distance teaching — various combinations of broadcasting, print and face-to-face study — for secondary education.

Secondary education at a distance

Distance teaching — combining the use of correspondence courses with some face-to-face support and, sometimes, broadcasting — has been used in various ways for teaching at secondary level. We look at these in more detail in later chapters. The way in which different media have been used, and the concentration on one medium rather than another, have also varied from time to time and from place to place.

Distance teaching was first used at this level to provide courses for a small minority of adults who had not received an adequate secondary education and wanted to catch up with what they had missed. This was the mainstay of the correspondence colleges which originally dominated distance teaching. Then similar methods were used by the state authorities in Australia and New Zealand to reach remote children who could not travel to secondary school. And more recently similar methods have been used on a much larger scale in developing countries to offer education at this level to adults for whom there were no secondary schools when they were younger. In Kenya, for example, correspondence and radio have been used to provide education at secondary level to teachers who had no opportunity for study at this level when they were themselves at school.

Distance teaching has been used for a quite different purpose too: to raise the quality of education within schools. In Mauritius, in Britain, in the United States, distance teaching has been used to allow schools to teach in ways which would otherwise be beyond their resources. It has been used both to raise the quality of teaching in subjects already taught at school, and to introduce new subjects to the curriculum.

And so, in various parts of the world, there is now experience of the potential of distance teaching to address education's two major problems — of quantity and quality.

The simple case

There is a danger of being too subtle in trying to weigh up the case for expanding and improving education. The more sophisticated our analysis of costs and likely benefits for different levels of education, the easier it is to lose sight of the simple case for secondary education for all. And there is a simple case for expansion. Today, in industrialised countries, it is taken for granted by most citizens and most teachers that full-time education ought to continue until children are 16 or so. If we assume that this case does not hold for the third world, then we apparently assume that, in the south, people and their societies can manage with less education than their brothers in the north. A bold assumption. That sort of analysis is curiously like the ones, based on class rather than wealth or race or stages of development, used to restrict secondary education in England a couple of generations back. The English historian and political thinker R.H. Tawney set out the argument, 60 years ago, when rationing by price meant that less than 4% of English children got free secondary school places.

> It is sometimes objected by persons without practical experience of educational questions that a wide extension of secondary education is not desirable, because all but a small minority of children — usually, it may be observed, a minority not in excess of the number being educated at the time when the objection is advanced — are not, as it is said, 'worth educating'. It is not necessary to point out that those who use this argument do not, apparently, regard it as applicable to themselves or to their own children . . . To those who ask, 'What use is secondary education to a working-class child?' the most obvious answer would appear to be to ask, 'What use' (since that is the formula favoured) their education has been to them?
>
> In reality . . . (there is an) immense mass, not only of average talent — and average talent is worth cultivating — but of exceptional talent, which is sterilised for lack of educational opportunities.
>
> (Tawney 1922, p.66)

Tawney went on to anticipate human capital economics with the reminder that

> From a purely economic standpoint the most important part of the capital of a country consists of human beings. Wealth applied to improving their physical and intellectual attainments is the most remunerative of all investments since it adds to that particular type of productive power on which the ability to use all other natural advantages, and to overcome natural disadvantages, ultimately depends. In the partnership 'between those who are living, those who are dead, and those who are to be born,' which forms the life of society, almost the most vital

link is the provision which each generation makes for posterity by means of education.

(*ibid.*, p.145)

Analogies between past and present, and between rich countries and poor are, of course, dangerous. The point of quoting Tawney is not to draw false comparisons between England of 1922 and any developing country of today. Rather it is to make the point of principle on which the argument of this broadsheet rests — a simple expansionist one. But the comparison between the rich countries of the north and the poor of the south suggests one hidden assumption which we are not making. The assumption concerns curriculum. If, in our analysis of educational developments, we are making analogies between north and south, it might be assumed that we were arguing for the curriculum to be constructed on essentially the same lines. And that is not part of the case. That the complexities of life now demand formal education for both childhood and adolescence, as they always demanded informal education out of school for these years, does not mean that throughout the world they demand the same educational content. The question of content is open. As a result it is necessary for us to consider not just the nuts and bolts of distance teaching, but also the subject matter which is to be offered through it. In thinking about secondary education, therefore, our first practical question, beyond the philosophical and political ones touched on in this chapter, must be to ask what should be taught.

Two others are as important. The first is about resources. In its latest *Education sector policy paper*, the World Bank blandly argues that 'At the secondary level, there are wide variations among countries in the present quality, and in the capacity to expand at present unit costs. It will, therefore, be necessary, in some cases, to concentrate on improving the quality, and elsewhere on expanding, secondary education, while reducing unit costs at the same time' (World Bank 1980, p.44). And we would all like to square the circle in the same way, having more, and better, and cheaper education. And much else. The question is how, and, in our context, how far the methods and economics of distance teaching make that squaring possible.

Finally, there is a question about quality. Distance teaching has been used most of all at secondary level to offer a cheap, inefficient, inferior education for those who could not afford the best. It has provided correspondence courses for those who could not get to proper schools. It has worked through study centres, run on the cheap, and providing a version of secondary education which nobody pretends to be as good as that available in full-time schools, but is better than nothing. Is it, then, a temporary expedient while we construct a better education system for

the 21st century? Or is there any way in which distance teaching can provide an education of quality second to none, or can support such education and make it more widely or more cheaply available to all?

Three questions then — about curriculum, about expansion, and about quality. We try to answer them in two ways, by looking at the visionaries, or prophets of education, who have struggled with the awkward relationship between secondary schools and their host societies, and by looking at the practical experience which distance teaching has acquired, and then to achieve a synthesis between them.

Chapter 2: Visionaries

We should be sad fools if we could not dream. To chart the future of secondary education we need to look at the visions of educational thinkers as well as the practice of schools, colleges and study centres. In this chapter we consider the ideas of half a dozen reformers. We do so, not in a belief that the extravagant or novel is always wise, but because we ignore the eccentric at our own and our students' peril, condemning them to a monotonous diet of educational orthodoxy. Our choice is eclectic but, as we shall see in the next chapter, some threads run clearly through their varied ideas. We look at the ideas of Henry Morris, who reorganised education in Cambridgeshire; of Francisco Villen who set up Radio Ecca in the Canary Islands; of Rex Lee who saw television as a tool to reform education in American Samoa; of the National Christian Council of Kenya, who developed village polytechnics; of Patrick van Rensburg who set up the Brigade movement in Botswana.

Henry Morris

We start nearest home. Henry Morris was, for most of his career, chief education officer for Cambridgeshire. He held the post from 1922 to 1954. Control over education in England is traditionally decentralised, so that, within limits, a local education authority has had considerable freedom to develop schools in accordance with its own vision, and its own educational policy. Where a chief education officer can get the support of his committee, or dominate its thinking, he in turn has the opportunity to create schools which reflect his vision. Henry Morris, partly with the support of his committee, and partly with no more than their reluctant consent or even hostility, made the most of this freedom.

Morris began work at a time when only a small minority of children went on to secondary school and when there were severely restricted opportunities for adult education. His vision was of a village college which would meet the educational needs of the whole community. This was how he saw it:

> If we wish to build up a rural civilisation that will have chronic vigour the first essential is that the countryside should have a localised and

indigenous system of education in its own right, beginning with the child in the primary school . . .

In Cambridgeshire the aim would be to establish in about ten carefully selected centres . . . a system of village colleges which would provide for the co-ordination and development of all forms of education: primary, secondary, further and adult education, including agricultural education, together with social and recreational facilities, and at the same time, furnish a community centre for the neighbourhood . . . the narrower conception associated with the isolated elementary school would be abolished. It would be absorbed into a larger institution . . .

The village college as thus outlined would not create something superfluous; it would not be a spectacular experiment and a costly luxury. It would take all the various vital but isolated activities in village life — the School, the Village Hall and Reading Room, the Evening Classes, the Agricultural Education Courses, the Women's Institute, the British Legion, Boy Scouts and Girl Guides, the recreation ground, the branch of the County Rural Library, the Athletic and Recreation Clubs — and, bringing them together in relation, create a new institution for the English countryside. It would create out of discrete elements an organic whole; the vitality of the constituent elements would be preserved, and not destroyed, but the unity they would form would be a new thing. For, as in the case of all organic unities, the whole is greater than the mere sum of the parts. It would be a true social synthesis — it would take existing and live elements and bring them into a new and unique relationship.

The village college would change the whole face of the problem of rural education. As the community centre of the neighbourhood it would provide for the whole man, and abolish the duality of education and ordinary life. It would not only be the training ground for the art of living, but the place in which life is lived, the environment of a genuine corporate life. The dismal dispute of vocational and non-vocational education would not arise in it. It would be a visible demonstration in stone of the continuity and never ceasingness of education. There would be no 'leaving school'! — the child would enter at three and leave the college only in extreme old age. It would have the great virtue of being local so that it would enhance the quality of actual life as it is lived from day to day — the supreme object of education.

(Morris as quoted in Rée (1973), pp.145, 148, 154)

Morris and his successor built twelve village colleges throughout Cambridgeshire and his ideas have fed into the development of schools in England much more broadly. Today, according to the *Cambridge Evening News* in September 1982, 'if Henry Morris came to Swavesey he would be delighted, because our village college is exactly what he envisaged, with young and old involved in a host of activities, round the clock, through the year from the cradle to the grave; from the family planning clinic, the baby clinic, the playgroup, right through to the Over 60's lunch club. He would feel at home too, because he had

endless battles with county councillors who lacked any positive commitment to community education'.

Morris had passionate views not only on reintegrating education with the life of the community but also on its curriculum. He struggled against what he called the 'pedagogic fallacy of projecting the intellectual and aesthetic understanding of maturity into the minds and personalities of young people' and in contrast 'would recall, without sentimentality, the meaningful boyhood experienced in the past by the sons of fishermen or farmers, educated largely out of school and out of the reach of pedagogues, and learning about life in the world of action' (Rée 1973, p.83). Looking — and it must have been through slightly rose-tinted spectacles — at Impington Village College in 1942 he saw instead:

> The secret of the Senior School is Activity — the major road to knowledge both for children and grown ups. Here . . . the dismal reign of chalk and talk, of the mechanical use of textbooks and the piling up of parrot facts unrelated to the child's experience is finished. The school has become a society with a way of life, a hive of constructiveness. One group is in the 6 acre garden, with its adjacent laboratory and greenhouse. Here all kinds of fruit and vegetables are grown for experiment and demonstration. Seeds and manures are tested, accounts and records carefully kept . . .
>
> (broadcast talk quoted in Rée (1973), pp.84-5)

The village colleges were a response to the needs of Cambridgeshire in their time. But two essential features of them, and of Henry Morris's vision, are of more permanent importance. First, they were open institutions in the sense that they were open to all members of the community, young or old, who wanted any form of education. This had important consequences for them as institutions, and for the content of what they taught. It meant that their concerns could not be bounded by the four walls of the classroom and that their curriculum could not be limited by the orthodox and the academic. Second, only the best was good enough. At a time when much school building was no better than humdrum, Morris commissioned Walter Gropius to design Impington Village College. He insisted that the college's walls should be decorated, but with original works of art and not with reproductions. Classrooms needed flowers, but in vases, not in jam jars. Public education demanded and deserved quality in small things and in large.

Francisco Villen Lucena SJ

Henry Morris's first move in reforming education in Cambridge was to

neutralise the opposition of the churches to his plans which, necessarily, increased secular and reduced clerical control over education. (He did so by getting broad agreement between the churches on the religious education syllabus for Cambridgeshire.) It is a fitting irony to move next from Protestant England to Catholic Spain. Francisco Villen began his educational work in Spain itself, where he had access to a small, country, radio station at Montilla. He experimented there with the use of radio for education and looked also at the work of Monsignor Salcedo in Colombia. Salcedo started the Colombian radio school, ACPO, which used radio programmes, printed lessons and village learning groups for basic education. In the light of ACPO's work, and of his own experience at Montilla, Villen set up Radio ECCA (Emisora Cultural de Canarias or the Cultural Station of the Canaries) in 1963. It began broadcasting in 1963 with a staff of four teachers and has since grown steadily to the point where it has taught over 11% of the total adult population of the Canaries.

> The founder of the station, Francisco Villen Lucena S.J., decided that the first task should be to provide socially deprived sections of the community with cultural opportunities. Having learned about the methods of Radio Sutatenza, which was already teaching by radio in Colombia, he set about creating a Spanish equivalent . . .
>
> Radio ECCA's first priority was to teach reading and writing, thus providing deprived sections of the population with what they most urgently required. Its principal focus of attention was, and still is, the poorest classes of society. But this section of the population, and all others, also require educational provision at a more advanced level, which since its inception, Radio ECCA has striven to provide. ECCA's courses have diversified, and continue to reflect the needs of the population to which they are addressed.
>
> Although its efforts are concentrated in the formal area, Radio ECCA does not exclude non-formal education altogether. It presents some courses which result in an academic award and others which do not. Above all, its unswerving aim is to raise the cultural level of the population with a view to bringing about greater individual freedom and a progressively increasing share in public life.
>
> Radio ECCA works on the basic premise that only the progressively more educated person can preserve his freedom and participate to the full in the life of today. In addition, to educate the weakest is the best way to put an end to the excessive social and economic inequalities which still exist.
>
> (Espina 1982, p.208)

Like his brothers in Latin America Villen was attracted by radio's power to reach an audience who could not otherwise get the education they needed to achieve that freedom and that ability to participate in

their own society. Today Radio ECCA teaches by combining three methods — radio programmes, print and face-to-face study.

The teaching is built around radio programmes. ECCA began work by teaching literacy and moved on to provide an alternative to primary and lower secondary education, as well as courses which do not lead to qualifications but are 'aimed at improving both quality of life and job performance' (*ibid.*, p.212).

Each radio lesson is based on a 'lesson answer sheet'. Each student has a copy, as has the radio teacher. During the broadcast, the radio teacher makes constant reference to the sheet and the student is expected to write on his copy in response to the teacher's words. The lesson master sheets gradually build up to form a textbook for the student. A weekly meeting between the student and a tutor is the third element in radio ECCA's teaching. Each student is attached to a tutorial centre and is expected to attend it once a week. He meets his tutor to get general guidance on his written work; he gets feedback on his performance and attends occasional seminars with other students; and he pays his weekly tuition fee. The costs of Radio ECCA's courses are subsidised but a fee is still charged to each student.

Thus Francisco Villen's ideas have grown into an institution which is now playing a major part in education in the Canaries and has influenced the development of education in Latin America and in Spain. Two features of his work are of general importance. The first is philosophical — the belief that an academic curriculum, leading to qualifications which are at least parallel to those offered at school, is not only a practical necessity for the educationally deprived, but also something which can, in Espina's words, broaden students' 'horizons, working progressively towards full personal development'. The second is practical — that his particular combination of print, broadcasting and face-to-face study is an effective and relatively cheap way of teaching adults.

H. Rex Lee

Educational television was one of the false gods of the 1960s. We thought or hoped that it might revolutionise education. Cables, running along the old tram rail ducts, were going to transform the teaching of languages in Glasgow. Education of children throughout the Ivory Coast was to be based on television and illiteracy was to be banished in Calabria.

The dream has faded. Technical miracles have come up against social realities and against numerate accountants. Television has proved neither particularly cheap nor dramatically effective. And the first of half a dozen glamorous television projects in the third world, that of

American Samoa, has changed beyond recognition. But the dream was not inglorious and the vision of Rex Lee, who launched Samoa's television project, was neither absurd nor irrelevant to the needs of Samoa and of other countries like it.

Eastern Samoa is an American colony in the south Pacific, ruled until 1950 by the United States navy and more recently by a series of governors, often changing at the rate of one a year, appointed from Washington. H. Rex Lee was appointed by Kennedy and served from 1961 to 1967. Lee, a career civil servant, was appalled at the legacy of neglect he found in education as in other government activities. There were 56 schools but most lacked permanent buildings and many lacked walls, consisting only of thatched roofs set on wooden poles. None of the primary school teachers had been trained and the 'sum total of classroom equipment usually consisted only of a weather-beaten blackboard and a wooden box holding a supply of paper, pencils and chalk' (Schramm *et al.* 1981, p.16). Despite this reality government policy was that Samoan education should aim at the standards of the mainland United States.

Lee's reaction was to give the reform of education the highest priority and to argue that

> There was no time for waiting, no time for 'armchair patience' — there has been too much of that for sixty years, he has been quoted as saying . . . He was turning over in his mind a daring idea: could television be used to share the best teaching, and to spread the use of English over the islands?
>
> (Schramm, 1967, p.14)

Lee proceeded to raise the necessary finance from Congress, build schools and set up a television station.

> As our engineers were climbing mountains, our curriculum people were entering some new educational country. A year before we broadcast our first signal, they were engrossed in devising new rules and methods of teaching. We threw away our old textbooks.
>
> (Schramm *et al.* 1981, p.39)

On 4 October 1964 the television service went into operation. It was soon carrying the whole curriculum in all subjects and for all grades of primary school. Hopes were high. The curriculum was changed; teaching methods were changed; school attendance figures improved; children did better in their tests. By 1966 Lee could claim

> While it is too early to measure effectively the total result of our educational venture, we believe that our students will soon be getting an

> education that is equal to that offered by good schools in the United States. We believe that our system has enormous implications for the under-developed countries where the majority of the earth's people labour under hardships of ignorance.
>
> (*ibid.*, p.63)

Alas, the dream soon faded. Lee's haste to reform left too little time to develop good curricula or to resolve the difficult questions of language policy. Samoan teachers were inadequately consulted and their role, in a new kind of school, was not properly worked out. Parental objections built up. Rote learning was not eliminated from schools. And the television network, created just for schools so that the educational budget had to foot almost all the bill, proved expensive. After Lee's governorship, the television service was steadily reduced in size and, more important, downgraded from carrying direct teaching to a more limited job of providing enrichment to ordinary classroom lessons.

So the history of television in Samoa is far from being a success story. There is a sad and telling contrast between the boldness of Rex Lee's planning and the way the project was implemented. Despite that, despite its haste and its speedy collapse, Lee earns his place in the gallery of visionaries because of his grand and arrogant view that broadcasting could, and should, transform education, even if he did not work out in adequate detail how that transformation could be effected.

The National Christian Council of Kenya

The National Christian Council of Kenya looked, in 1966, at the educational needs of primary school leavers and, in their report *After school what?* came up with the idea of village polytechnics. The idea was to set up small, local, institutions which would provide technical training to meet local needs and do so at low cost.

> In broadest terms, village polytechnics are low-cost primary training centres in rural areas. They are part of the response to two familiar and pervasive features of the Kenyan scene: the situation in which approximately 100 000 pupils leave primary school each year with no prospect of regular wage employment in the modern sector of the economy, and the frequent assertion that community self-help can ameliorate this situation. They are widely perceived to be both a means of alleviating unemployment and a practical manifestation of an official rhetoric which exalts the productive potential of self-help activity . . . Between 1966 and 1972 more than 53 village polytechnics have been established and the demand for them is expanding.
>
> (Court 1974, p.220)

Guidelines for the polytechnics were spelt out by the Christian Council:

1. Polytechnics should be small institutions, utilizing locally built structures, serving local areas, and taking only day students.
2. Agriculture should be part of every polytechnic's program; students should spend at least part of their working time at their home farm or on their own land, where available.
3. Artisan skills should be taught so that students know how to construct and maintain equipment as farmers and traders. The program's aim is not to produce specialists or semi-skilled artisans who desire wage-earning roles.
4. A functional form of general education (math, language, and social studies) should be provided to enable students to understand their environment more clearly and to develop skills, both as individuals and in cooperation with others, in organizing production, trading and in self-help development.

(Sheffield and Diejomaoh 1972, p.75)

Village polytechnics grew steadily after the publication of *After school what?* so that, by 1977, there were 150 of them. All were small, local institutions, trying to meet local demand for technical training. They generally used local staff as instructors, although some overseas volunteers were also employed, and so had some success in keeping teaching closely related to local practice. There is evidence, too, that students who worked through village polytechnic courses did get jobs at the end of them. Naturally there were differences between different village polytechnics. Some concentrated on two-year courses, broadly comparable to more conventional technical training, while others concentrated more on short courses. Naturally, too, there was pressure on them to become more formal institutions: there were demands, from employers and potential employees alike, for courses that would lead to formal qualifications. There were demands for all the trappings of the formal school, from libraries and school meals to school uniforms.

In that way reality has fallen short of the Christian Council's vision. And the polytechnics have remained small: even with a reported 6 000 students in 1977 they could make only a small contribution to the needs of the 100 000 school leavers. The village polytechnics do, however, suggest that, at least for some students and under some circumstances, one can go beyond rhetoric about educational alternatives and create a new kind of hybrid, half school and half village training centre.

Patrick van Rensburg

Patrick van Rensburg started work as a South African diplomat; he worked outside South Africa and gradually became aware of the

obscene absurdity of the country's official policy. In the early 1960s he left his job and moved to Botswana, of which he is now a citizen. He settled in Serowe, the capital village of the Bamangwato tribe, and taught for six months in a primary school before establishing a secondary school, Swaneng Hill. The school was going to be rather different from other secondary schools in Botswana. Its students were to be involved in building, maintaining and running it, so that the relationships between school and village, and between work and learning, were to be different from those in an orthodox school. Its curriculum was to be geared more to the needs of developing, rural, Botswana than to those of wage-employment in the towns. In time, however, the school became less and less distinguishable from other secondary schools in Botswana. Later, van Rensburg wrote:

> Increasingly I felt that Swaneng Hill School was failing in the aims that those who shared my views and worked with me, and I, had set for it. Young people had competed and struggled to get into secondary school, with the backing and urging of parents, precisely in order to obtain the jobs that beckoned in the formal sector. Could we really expect to use the secondary school to change their ambitions and outlook on the way, and what did we individually expect them to do? . . .
>
> I came to feel that formal schooling was geared absolutely to the needs of the formal sector and wholly resistant to change and reform. Many of its functions were related to shaping attitudes and preparing young people for behaviour and a way of life appropriate to the formal sector, rather than to strictly educational purposes.
>
> (van Rensburg 1978, p.15)

Meanwhile van Rensburg had started something different, which he called a Brigade, echoing the traditional language of Botswana where each age-set of men was organised into regiments for communal work on behalf of the tribe. The Brigade idea was much further from a traditional school. Young men and women entered a Brigade at the age of about 16 and spent four days a week learning a trade or craft. On the fifth day they studied more traditional academic subjects. The first Brigade was of builders, and they were followed by farmers', leather-workers', vehicle repair and other Brigades. This is what a Brigade looked like:

> If the visitor is to see everything happening in the Brigades, he must rise at 5 o'clock in the morning. He will go down to the Farmers' Brigade, where he will find trainees already up and about. Some of them have been out to the pastures to bring the dairy cows in for milking. The big Friesland and smaller Jersey cattle will be near the cowshed. The trainees may be checking on their condition to see if any are ill or on heat . . . The trainees

will have cleaned out the cowshed after milking the night before and they will have placed supplementary feeds in the troughs at the front of the milking berths. They will milk by hand, taking care to wash their hands before. Other trainees will collect the milk, weigh it, record it and test it in the little dairy laboratory. They will pasteurise it in sealed milk cans immersed in boiling water for some minutes . . .

The visitor will find one of the trainees cooking soft maize-meal porridge for breakfast in a wood and iron shelter next to the dormitory, with its high, thatched roof. Alison Kirton may be teaching some of the trainees English and Development Studies in the thatched classroom nearby, if it is their day for lessons. Later in the day, Vernon Gibberd may come there and, with Tlhagiso Mpusang, may give an agricultural-theory lesson.

The visitor may drive by Land-rover for 20 miles along sand tracks and bumpy, winding, bush roads and across dongas to the 14 000-acre beef ranch. He will find that it has been fenced off by trainees into a number of camps. The cattle graze in one of these camps for a few days and then move to another, so that the first camp will not be grazed again for 45 days . . .

Most of the Builders' Brigade and Carpenters' Brigade . . . will have gone off by lorry to the various building sites in Serowe . . . Some trainees will be working on a house for someone in Serowe. Some will be building the Swaneng Co-operative Society's new hotel and butchery. Some will be building a new carpentry workshop for the Carpenters' Brigade, at the Brigade site in the middle of Serowe. Trainees will be seen at the different sites, digging foundation trenches, mixing and pouring concrete, mixing mortar, laying bricks, plastering, glazing, painting, fitting doors, making rafters for roofs, putting them up on the walls, and fixing corrugated-iron sheets to the roof purlins. The stonemasons will be building with the grey-black basalt stone found on the hills, making jig-saw-patterned rondavel walls for rooms at the new hotel, or they may be cutting and dressing sandstone for use in a building . . .

One of the managers of the Builders' and Carpenters' Brigades may be in their prefabricated office on the school site, talking to a customer about a plan. John Kirton, the Brigades' volunteer architect, who is also paid from its revenue, may be at his drawing board, assisted by two or three Advanced Building course trainees, preparing a plan for a new building for a customer, or they may have gone down to set out a building on the ground somewhere.

(van Rensburg 1974, pp.116-119)

The first Brigades were all in Serowe, but the idea then spread through Botswana and they were established in most of the country's major villages. All recruited students who had left primary school and stood little or no chance of going to a conventional secondary school, although by this time secondary education was expanding rapidly in Botswana. And, while there were differences between the Brigades, we

can generally identify three aims which they had in common

The first was that they would provide an effective technical training. They did this both through their employment of competent instructors, and through the large amount of practical work which students undertook as part of their training. Van Rensburg made no apology for the amount of practical work involved:

> A trainee in the Mechanical Brigade, when learning welding, will be expected to weld several hundred pieces of steel furniture when the Brigade has a contract to supply the country's primary schools with contract furniture. Or a building trainee might be expected to lay countless bricks during his three-year course; or to mix concrete or sift river sand. Farm trainees milk cows by hand and clean the dairy shed for many days on end . . . These operations are essential to the relevant trade and a tradesman will have to learn to do them properly and thoroughly.
> (van Rensburg 1978, pp.42-3)

Obviously some Brigades have been more successful than others, but the evidence suggests that they have been reasonably successful in meeting this first objective of providing a trade training. Brigade members have not, apparently, found it difficult to find jobs in their trade once they finished their courses. And, where they took government trade tests, about 70% of them passed, which is a respectable proportion.

The Brigades' second aim was related to the first, and to the quantity of practical work required of trainees: they were expected to pay their way. Students did not spend their time doing exercises: their work was in fact as well as in name productive. It was sold, or their services were sold, in order to meet the running costs of the Brigades. Van Rensburg argued that 'the significance of the programme lies in generating enough income, through the sale of its services and products, to provide the greater part of its own financing. This takes the burden off the state and off the shoulders of the 43% of the population over twenty years of age' who must otherwise find the costs of educating the young (*ibid.*, p.13). Again, Brigades have varied in their success in meeting most of their costs; some have had considerable success and van Rensburg has been unswerving in his belief that this makes economic as well as educational sense.

Their third aim is much broader: to provide an alternative pattern of education, more appropriate to many third world countries, and in which there are major changes in the relation between work and learning. Van Rensburg argues that 'the pedagogy of schools is designed to serve the process of selection and rejection and is highly verbalized and theoretical; it is a means of culturally alienating a few. It is not designed as a means of educating everyone, with their different

talents and potential' (van Rensburg 1981, p.140). He suggests that one of the ways of making education liberating is to 'make the workplace truly educative'. He seems to see the Brigades not as an alternative which can coexist side by side with the existing secondary schools, but as an alternative whose values are fundamentally different.

And there is the rub. In Botswana, the Brigades were set up, and still exist, alongside traditional schools. Bright children, good at examinations, go on to secondary schools and it is difficult for the Brigades to demonstrate the strength of their values alongside the tangible benefits of orthodox schooling. Part of the value of the Brigades is that they demonstrate how an alternative educational system might work, in a country where rural development took the real priority. Van Rensburg concluded in 1978 that 'if not Brigades as such, other forms and systems combining education and production will spread through countries of the third world . . . Even if Brigades do not prove replicable in Botswana, they have a significance beyond its borders as a practical attempt to create an alternative system of education' (van Rensburg 1978, p.73).

Chapter 3: Innovation, expansion and distance teaching

These ideas, drawn from five countries in three continents, are a long way from the reality of distance teaching, illuminated, as it often is, not by a vision of education as it might be but by rote learning in pursuit of formal qualifications. We can now ask how distance teaching could help towards a reform of secondary education along the lines proposed by the visionaries. To do that, we look first at what is common ground between them and then at the experience of distance education. From the visionaries we can pick out three ideas: about expanding education, about using the mass media to help with the expansion, and about the curriculum.

What the prophets saw

Our visionaries shared the idea of expanding education. Henry Morris, who, appropriately enough, became chief education officer in the same year that Tawney published his broadside *Secondary education for all*, wanted to expand education so that it was available not just to the fortunate minority in school but to the whole community. In the Canary Islands, Father Villen created Radio ECCA in order to extend education to adults who had never had a chance of going to school. In Kenya, too, the village polytechnics were for people who otherwise had no chance of secondary education. In all these cases, and in many others, the drive to expand education led to ideas for different methods of teaching and different views of what education was about.

More education, then, meant different education. It was obvious, for example, that a village college, teaching adults in their spare time, would teach something different from the regular school curriculum. By the 1960s, curricula were being questioned more vigorously and new attempts were being made to design curricula that better fitted the needs of developing countries. Governor Lee threw out the existing textbooks in an attempt to find something better for Samoa. Patrick van Rensburg started from scratch in working out what the Brigades should offer and came up with the combination of practical work and a classroom course in development studies. This was coupled with the

minimum of traditional academic work. The Kenyan Christian Council saw vocational education as being closer to the needs of rural young people than the traditional academic curriculum. While there are many different views on how the curriculum should be changed, one consistent strand in the discussion concerns the relationship between learning and work, an issue we come back to below.

Just as changing the audience for education changes its curriculum, so it changes the relationship between education and its host community. The traditional role for a school is to teach the educated minority whom society needs, and to keep its gates closed to the others outside. Its concern is with a minority and with the bringing of that minority into a lettered culture which most people do not share. That role has changed with industrialisation and with the coming of universal literacy and universal primary education. But, until the last generation or two, secondary schools have retained that elite status, and have continued to attract criticism for their elitism and for the way in which this alienates students from their community. Patrick van Rensburg's idea was for a school with a different relation to its community, as was Henry Morris's. They both, from quite different starting points, wanted an institution whose very existence was rooted in the needs of its community.

How to get there? Governor Lee and Father Villen came up with an answer which was not available to reformers in the past. Mass media had two attractions for them. First they could reach audiences beyond the school as Villen's radio programmes did in the Canary Islands and, second, they could reform education, taking new ideas into Samoan schools more quickly than would have been possible in any other way. Lee and Villen saw that mass media had the power to extend and transform education. That power is important if we are to attain the vision of secondary education for all and of a changed kind of education, which shifts the relationship between education and the community.

The vocational school issue

The idea of a changed curriculum and of a curriculum close to the community has long been a major theme of discussion about education. In particular, the relation between work and education has provoked a debate which is as yet unresolved.

Traditionally, school education has preceded work. Children went first to school and later to work, receiving first a general education and then any more particular training they needed on the job. But the demands of a changing society and a changing technology have often blurred that distinction. At the end of the last century, for example,

rural American high schools had a short school year so that children could spend many weeks working on the farm. Even after schooling became compulsory in England there was a let-out clause for children who were already at work. Correspondence education made it possible for people to link work and learning in a different way — studying in their spare time while remaining full-time in their jobs. The dictates of a peasant economy made this the right approach for Father Villen in the Canaries, just as the demands of industry forced the USSR into using correspondence education for technical subjects in the 1930s. In both the Canary Islands and the Soviet Union these schemes made some attempts to relate the content of what adults were studying to their work. Patrick van Rensburg's approach was more radical in establishing a single enterprise which provided both employment and education, to the same people and at the same time. He saw this as an alternative, and an improvement to the orthodox school curriculum.

Van Rensburg is not alone: there has been a steady line of criticism of the usual academic school curriculum since at least the middle of the last century. It has been argued that ordinary schools, and especially secondary schools, in many countries were too academic, too bookish and taught a curriculum unrelated to the needs of their societies. In contrast educational planners and critics have argued that a technical education of one sort or another should have priority over academic teaching. In the United States Booker T. Washington founded the Tuskegee Institute which concentrated on technical education for black Americans. He successfully resisted pressure from the parents of his students that they should follow a more academic curriculum. The influential Phelps Stokes report of 1922 on education in Africa argued for 'the development of an educational system substantially based on agricultural curriculums' and a system of elementary trade schools 'to teach the simpler elements of trades required in Native villages and to prepare for the less skilled occupations in industrial concerns' (Foster 1965, p.158). Over the next 40 years, many educators and administrators tried to implement such a policy, but usually with little effect.

For, despite the arguments of the theorists, parents and children alike have seen the academic route, rather than technical one, as the way to wealth and power. It was an academic curriculum, even if it required studying ancient languages and the geography of the Thames valley, which led from Indian and African villages to white-collar jobs in the cities. The needs of the rural economy, and the reasonable policies of educational reformers, carried less weight than the evidence that employers, controlling the coveted government and commercial jobs, in fact valued orthodox academic skills. The pen looked wealthier than the plough. Thus, in his struggles to make the curriculum more

practical, Patrick van Rensburg had a long line of intellectual ancestors, but a line with little record of success.

Equity, quality and curriculum

The problem, as it affects secondary schools, is more serious now. When a small minority of children went to secondary school, then a curriculum geared to the needs of a minority did not matter very much. An academic curriculum did little harm if, in fact, it led students on to the kind of higher education they wanted, and which their countries wanted for them. Many tacitly accepted that their own cultural uprooting, if that happened, was a small price to pay. But now, if all, or many, children are to get secondary education, then there is a new case for trying to gear it to the long-term needs of the majority. And that poses a dilemma.

Let us assume that we know how to design a secondary curriculum that will give children the education they need to control and improve their adult environment, whether it be in the country or in the cities of the 21st century. It is likely that such a curriculum will be very different from what is taught at school today. (If not, then all the critics, all the reformers, and all the students with cries for relevance, are together wrong.) It is also likely that it will be controversial, and more practically oriented than many curricula today. A school, or a ministry of education, will then have to choose between the new curriculum and the traditional, academic, one, either for all its students or for some of them. If it chooses the old, then it will be criticised for the irrelevance of what it offers, and for failing to equip its students for the lives they are to lead. If it chooses the new, then it will have to face the full weight of parental conservative concern, unconvinced that the new curriculum will lead to the benefits which the old brought, at least for some. And it will face the full weight of academic orthodoxy. For students of the new approach will not have prepared themselves for the higher, academic, curriculum which universities argue they must demand. And if educators dodge the problem, by dividing the children early into two groups, then the new will be no more egalitarian than the old.

All this is not just theory. The tough evidence from Botswana is that graduates of the Brigades do not find their way into further or higher education with the same ease as children from ordinary secondary schools. And parents value ordinary secondary schools over the Brigades. If an alternative system of secondary education is to be created, and is to foster and not to obstruct equity, then we have to seize the horns of this curricular dilemma.

To do so takes us to issues of the content, rather than the organisation, of education. For it poses questions about a curriculum

which would meet the needs of all children, and would at the same time serve as the foundation for further study for the minority who were going on beyond secondary school. If such a curriculum cannot be framed, then the interests of equity and of quality in secondary education are in conflict. It would be a brave man, or one unusually sure of his ideological ground, who would determine *a priori* on which side to come down.

In practice, schemes to widen access to secondary education have seldom confronted the problem head on, for two reasons. First, some programmes, especially in the Latin American radio schools, have been aimed mainly at adults, rather than children, and adults who are committed to staying in traditional occupations in the countryside. An education based firmly on immediate peasant needs meets the demand of their audience, so long as that commitment remains. Second, other programmes, like the government correspondence programmes in various countries of Africa and States of India, have seen their role merely as providing a possible alternative to full-time study, for people who would otherwise have no opportunity for secondary education at all. Half a loaf being better than no bread, and ministries of education having more pressing demands on them than the interests of a handful of part-time students, such institutions have had no opportunity of being better than second-class schools. Some have not even been that good. And, while they have given chances of education to thousands, secondary education for all ought to mean something better.

To sum up, in many countries the decision to make secondary education universal, or nearly so, brings in its train two consequences. First, as the costs of doing so are otherwise prohibitive, it compels a search for alternative methodologies. Second, as it is dangerous to assume that a curriculum for, say, 15% of the age group will also serve the interests of the remaining 85%, it should stimulate a search for an alternative curriculum. The relationship between a new, alternative, curriculum and the academic or traditional alternative presents problems of equity and of educational quality. Both consequences lead, too, to reconsidering the relationship between education, work and society.

Distance teaching: to what end?

Can — does — distance teaching help us here? Experience suggests that it may, although the evidence is far from all being positive. Teachers and administrators have used it to grapple with the key problems of improving and expanding education. Thus it has been used in school and out, and used for teaching both a conventional curriculum and a new one. In some cases the same materials have been used to teach both

students at school and others outside. This classification can be shown diagramatically, as in Table 2.

Table 2: Examples and purposes of distance-teaching projects

	In school	*In and out of school*	*Out of school*
Traditional curricula	APPIL physics teaching in London courses	University of Nebraska high school correspondence courses	Botswana Extension College secondary correspondence courses
		Mauritius College of the Air multi-media courses	
		Malawi and Zambia Correspondence Depts. secondary courses	
New curricula	Nicaragua radio mathematics project		Radio Santa Maria Dominican Republic radio school for adolescents.
	El Salvador and Samoa television projects		Radio ECCA Canary Islands radio school for adults
			TEVEC — Quebec multi-media courses for adults

Distance teaching is usually seen as something to be used outside school. But it has sometimes been used simply to teach a conventional course at school. The Inner London Education Authority, for example, developed a project called APPIL to overcome a shortage of physics teachers in secondary schools. Children following the course used it at school, under the guidance of a teacher who was not a physics specialist but learned the subject matter from the printed course. Similarly, in many parts of the United States correspondence courses were used to widen the curriculum of remote, rural, high schools. The University of

Nebraska was one of a number of universities which developed courses for use in school.

More often, distance teaching has been used to introduce a new curriculum, or a new subject, to school. In Nicaragua, radio, supported by printed lesson notes, was used to change the mathematics teaching of schools. In Samoa, as we saw, mass media were used not just to enrich the schools' teaching but to change the curriculum as well.

Once teaching materials exist, it may be possible to use them for more than one audience: as Table 2 shows, a number of institutions, varying from the University of Nebraska to the Mauritius College of the Air, have developed school-level courses to widen the local curriculum, but made them available also to out-of-school students. In Africa, government correspondence colleges, in Malawi and Zambia, use correspondence for two groups of students, both of them out of school: some work at home, while others attend study centres where they get help and support from a local tutor, although their teaching comes in print and from the radio. In practice, such subjects have usually been tied to a traditional curriculum rather than a reformed one. And there are good practical reasons for using unconventional methods to teach a conventional curriculum. Isolated students in rural Nebraska schools, or individual students studying for GCEs in a central African village, face enough academic barriers without having to overcome suspicions of an unorthodox curriculum.

In the English-speaking world distance teaching out of school has been dominated by programmes which follow a traditional curriculum, although they use unconventional methods to reach their external students. One example from many is the courses for secondary-level qualifications of the Botswana Extension College. They use correspondence and print to teach secondary courses for adults who have had little or no secondary education. But distance-teaching methods do not have to be tied to a conventional curriculum. In Latin America, and in one project in Quebec Province of Canada, mass media have been used to teach a curriculum, different from that available in schools, and tailored to the particular needs of adults. Courses of that kind may be far removed, in style and content, from correspondence courses which mirror what is offered at school. And they may give us important clues for the future development of secondary education at a distance.

Despite this variety of different approaches, distance-teaching experience at this level has some things in common. In most cases it combines some kind of face-to-face study with some teaching through mass media. Experience suggests that both approaches are necessary, especially where dealing with young and inexperienced students. Different styles of supporting students and different ways of using mass

media have been developed by different institutions. We put together their experience on face-to-face support in Chapter 4 and on mass media in Chapter 5.

Chapter 4: Face-to-face support

It may seem paradoxical to suggest that good distance education demands face-to-face teaching as well as thoroughly prepared materials. But many students find they need more help, and more support, than they can get from print or broadcasts alone. At secondary level this is particularly important, as the students are often adolescents, lacking the maturity and motivation which help — some — adults to learn successfully at home. Thus, whether students are working at home or in a school, and with a traditional or a new curriculum, questions about teaching and counselling arise. Some of that teaching and counselling needs to be done face-to-face.

The way in which such support is provided depends on how the students are working. Those who are working at home have rather different needs from those who are using distance-teaching materials at school, as in Samoa or El Salvador, for example. We can distinguish three different models for providing support to distance education students.

First, there are schemes which work on the assumption that students will do most of their work by themselves, at home. The radio schools, like Radio ECCA, work on this basis. Radio Santa Maria, in the Dominican Republic, has worked out a structure for supporting home students which is based on a weekly meeting with a local counsellor, and has important differences from the Radio ECCA model. In a quite separate development, colleges in southern Africa have tried to set up study centres which students attend occasionally to get back-up for their studies. SACHED (the South African Committee for Higher Education), which tries to provide education for black South Africans, has experimented with centres of this kind in Soweto. These schemes have in common the assumption that the students will attend them only occasionally, once a week or less.

Second, many adolescent students at secondary level, who cannot get into an ordinary secondary school, are able to attend some kind of institution every day. As a result, alternative schools have been created in a number of countries. Typically, these use mass media to offer an alternative route to secondary qualifications, and employ tutors who

are less well qualified than regular secondary teachers. In Mexico, for example, Telesecundaria was established in the 1960s to use television lessons to offer secondary education in rural areas where there were few or no proper schools. Primary school teachers were given a three-week training as tutors, and guide the students in their work, but do not teach them. Similarly in Malawi and Zambia, the governments have created study centres, which operate every day, and at which secondary-level students study through correspondence and radio, under the supervision of untrained teachers.

Third, mass media can play a role in raising the quality of education within a school. In El Salvador, for example, television was used as the core of a programme to reform secondary school teaching. Here the programme covered the whole curriculum. Other mass-media projects have involved only a single subject: radio was used in Nicaragua, for example, to change and improve mathematics teaching. In Mauritius correspondence, radio and television were provided to help the work of secondary schools in a range of subjects, some already taught but taught inadequately, others not available at all.

All three models for providing support to students make similar demands on a distance-teaching institution. They require that there should be sensitive help and counselling to individual students, and an organisational structure to support that. They require appropriate structures for liaison between organisers, producers and teachers. They depend, of course, on materials which have been created with the needs of the particular students in mind, and with an awareness of the conditions under which they will learn. And they demand a system of feedback from the periphery, where the materials are used, to the centre where they are made. They differ in the organisational requirements they make, and it is to these that we now turn.

Support for home students

Students learning at home face particular difficulties. If they are using distance-teaching materials, then subject content should be adequately presented in these materials. But that is not really enough: for immature students, and for students with limited background education, it is not easy to learn in isolation. Such students need to get support and encouragement, something which is quite difficult to do through broadcasts and extremely difficult to do through print. Children at school may get this from their teachers, but also get it from their peers; an isolated student lacks both the goad of a teacher and the encouragement, and pace-setting, which his peers could offer him. There is, therefore, a danger that a home student will get depressed and discouraged simply because of his isolation.

He may face more narrowly educational problems too. If he cannot understand his printed lessons, or broadcast programme, then he has no-one to turn to for help. That help may involve an explanation of the subject matter, or it may simply mean increasing the student's skills in studying. (Again, in a classroom, help of this kind may come from a teacher or from another student.) Even if he does understand it, learning by oneself, from a prepared text, can easily degenerate into rote learning. If we want to adapt centrally printed materials to the local needs of individual students, then we probably need some kind of face-to-face discussion to make that adaptation.

For sound educational reasons, therefore, distance-teaching organisations have tried to provide face-to-face support for their students. In many cases they have created a structure with two functions, to distribute teaching material and to support students with face-to-face help.

Radio Santa Maria, in the Dominican Republic, uses a network of field teachers who combine the functions of distributing printed materials and supporting learners. The field teachers are generally young people, with only a couple of years more education than the students.

Radio Santa Maria — Dominican Republic

The Santa Maria adaptation of the ECCA model combines six types of learning experience:

1. The basic educational aid provided for the student is a weekly set of six to eight attractively printed lesson sheets, one for each subject, carrying on one side an outline of the material to be explained in one week of radio broadcasts and on the other a series of written exercises. These lesson sheets, which over the twenty-three weeks of a course form a combination text and workbook, are distributed to the student each week for work in the home. Thus, the system of Santa Maria resembles a correspondence course with broadcast explanations and a weekly meeting with a field teacher.
2. Second in importance is a one-hour daily broadcast (Monday through Friday) explaining the material in the lesson sheets; one half hour is given to explanation and one half hour to working the exercises.
3. Supplementing the lesson sheets and daily broadcasts is a field

teacher who is to correct the written exercises, answer student questions, and detect weaknesses of individual students so that help may be given if necessary. The field teacher also performs administrative tasks of enrolment, giving examinations, and forwarding student fees to the central office. Through the field teacher, the student receives personal guidance in his or her own studies . . .

4. As a communitarian dimension of the learning process, the field teacher holds a weekly meeting with the students of his or her 'sector' to answer questions in a group context, explain material which is a problem to the whole group, provide general reviews for examinations, and give the examinations. An important part of this weekly interchange is the discussion of a social question which has been the 'central theme' of the various subject matters during the week.
5. Radio Santa Maria provides other general cultural and educational radio programs for different age and occupational groups which are designed to provide a cultural and educational support to the more formal educational process.
6. Although Radio Santa Maria maintains no staff for promoting organizations at the community level, its educational programs work through existing organisations, and the activities of the more formal educational courses. It is expected that students of Radio Santa Maria will consider active participation and leadership in community organizations part of their education . . .

Once a week, usually on the weekend, the student meets with the field teacher to hand in the lesson sheets for correction, ask questions regarding doubts that remain after the broadcast classes, engage in a group discussion of the central theme, receive the lesson sheets the field teacher has corrected from the past week, and, finally, pay the US$0.25 weekly fee and receive the following week's lesson sheets . . .

Field teachers are required to have (1) an academic level at least two years above the grade level being taught, (2) the personal maturity and reliability to carry out the local administrative duties such as collecting fees and passing these to the central office, and (3) a demonstrated leadership in the community in order to link the formal lessons with broader community activities.

Although the ECCA system in the Canary Islands prefers the local public school teacher as a field teacher, RSM has found that some of its best field teachers are young (like the students), frequently secondary school students who are leaders in youth organizations of the area. The small remuneration of US$0.15

which the field teacher keeps from the weekly fee of US$0.25 compensates for the six to ten hours spent on this each week, but the main motivation is community service.

In organizing a network of field teachers, an attempt is made to locate them in places of easy access so that each student can find a field teacher at least in a nearby community. Also, if a student must migrate to another part of the country during a course, he or she can usually find a field teacher near the new location and so will not need to give up the course. Although RSM provides a detailed instruction booklet and is beginning short training courses for field teachers, much of the training is 'in service' through a system of circular letters sent out with the weekly lesson sheets, a weekly instructional radio program, and the occasional visits of the field supervisor.

The field teacher has six main duties:

(a) Enrolling Students
Field teachers fill out the initial enrolment cards which form the basis of the student's permanent record and forward them to the central office . . .

(b) The Weekly Interchange
In a sector with the average of twenty students per semester, the field teacher is expected to set aside at least two hours for answering questions and for leading the discussion of the central theme. If students do not attend the interchange, they may be asked to withdraw . . .

(c) Correcting the Student Exercises on the Lesson Sheets
If the field teacher is faithful in correcting the exercises, it is possible to maintain a continuous diagnosis of student progress (or lack of it) so that problems may be solved before the student becomes discouraged and withdraws.

(d) The Weekly Report
On the Monday following the interchange, the field teacher is expected to send in to the central records department or to the office of the regional subcenter by mail or whatever means is convenient, a form stating the exact number of lesson sheets needed for each grade the coming week. On this form is noted the enrollment of the former week, the newly enrolled students, and the withdrawals. Thus, the central office knows exactly from week to week how many students are enrolled in each grade . . .

The weekly report form also has a space for other

comments, and the field teachers are asked to note especially the problems the students are having with the lesson sheets and the broadcast classes or other problems. On the basis of these weekly reports, immediate adjustments in the instructional materials or other aspects of the program may be made.

(e) Passing Collected Fees to the Central Office
Once a month the central records department sends to the field teacher a statement detailing how many students are reportedly enrolled in the sector, the number of lesson sheets and examinations sent out, and the exact amount which is to be sent by mail or delivered personally to the central or regional office . . .

(f) Giving the Examinations
The field teacher is responsible for giving a review before the examinations, administering the two examinations sent out from the central office during each course, correcting these examinations with the help of an answer guide, recording the grades on a special form, and forwarding these grades to the central records department for the permanent grade record of the student.

(White 1977, pp.175-6, 181-3)

This pattern of organisation works well in Latin America but has not been widely adopted elsewhere. Accounts of many Latin American projects describe how the networks of the Roman Catholic church in Latin America provide considerable support to projects like Radio Santa Maria. But that support could not exist without the pluralist traditions of these countries and the well established status of the church. In southern Africa, a different approach has been used to overcome the problems of educational isolation of students learning at a distance. SACHED, for example, which tries the difficult balancing act of educating black South Africans while remaining within the law, has tried to combine the central distribution of materials with the decentralised use of study centres. Again, the problem was to find a model which would work without specialist teachers but provide face-to-face help to students. SACHED's original idea was that students would visit a study centre and get help from what they called an elbow tutor — someone who sat at the elbow of a student and guided his work. Like the RSM field teacher, his job was to guide and help the student, not to teach him.

Study centres in southern Africa

Paud Murphy, who worked for SACHED and then for the Lesotho Distance Teaching Centre, described the function of a study centre in 1975 in this way:

A study centre is a place where correspondence students come to get help.

In a country with a national correspondence college there could be a large number of study centres spread all over the country. Each centre would be accessible to a large number of correspondence students.

The simplest kind of study centre might be a room open to students at certain times. It would have light, heat, chairs, desks and other students. A much more structured study centre would have a number of rooms, each set aside for a different purpose. It would have an administrator, a library and some equipment (including a radio and tape recorder). At regular intervals subject tutors would be available to help students. The administrator would organise discussion groups and films would be shown and seminars held regularly.

A structured study system has three elements: people, a place, and equipment.

(a) *People*

They all need training.

1. Course designers/writers. If a new course is being written and a study centre system is in existence or planned the writers should be made aware of the elements in the system and helped to write with them in mind.

Where a correspondence course exists a course designer should write supplementary materials such as tutor, administrator and student guidance sheets.

2. Tutors. These help the students to work through the written materials. They also teach certain parts of the course. They are usually teachers and may think they know their subject and all there is to know about teaching it. They do not know the correspondence materials or their role in the study centre system. Their role is to assist the students to work through correspondence materials rather than to replace the materials by their own teaching. Many teachers find it difficult to do this.

3. Administrators. These open and close the centres, issue

equipment, take rolls and occasionally initiate student discussions. They need training in the system, the administrative procedures and — very important — in student counselling techniques.

4. Students. These must be trained to use all the facilities and people available to them including other students.

(b) *Place*

Ideally there should be a number of rooms with lock up cupboards in some. One room should be set aside for quiet study for students, another for tutor-led groups.

The room should be well lit and heated and be accessible to large numbers of students.

(c) *Equipment*

There should be supplementary reading material — at least any extra reading recommended in the courses. There should also be any equipment needed for maths and science courses. A radio and tape recorder should also be available for use by students.

Designing a system

If we are interested in setting up a study centre system and making sure that it functions we should answer some of the following questions.

(a) What under-utilised resources are available? If schools aren't on double shift and teachers have spare time then they may be used in the system without too much cost. Schools might also be persuaded to share their library facilities.

(b) What money is available?

(c) What is the administrative structure of the college? A college with a large academic staff is in a better position to administer a study centre system than one without. Training must be provided for writers, tutors, administrators and students. The system must be maintained, serviced and evaluated.

(d) How many students are likely to use the centre? In a remote area with two or three enrolled students a study centre system would be expensive to set up and difficult to maintain. An alternative might be bringing the two or three students into a central area twice a year.

(adapted from Murphy 1975, pp.17-20)

There is a much greater stress on the centre as a place at which students get help, than there is in the Radio Santa

Maria model. And, in contrast with the RSM model, SACHED used teachers as tutors. This caused difficulties, as teachers were not used to the different role of being a tutor. David Adler, who directed the SACHED project until banned by the South African government, summed up their experience in working with such teachers in Soweto:

> We felt that we would need to have contact with the tutors and to train them in elbow teaching methods in contrast to the more usual classroom 'talk and chalk methods'. SACHED provided . . . a bursary for each prospective tutor to cover the cost of tutorials with full-time college academic staff.
>
> On the whole appointed tutors resisted attending these tutorials. Many felt insulted by our implication that they needed upgrading and everyone, even those who did take advantage of the scheme, found the travelling between Soweto and Johannesburg prohibitive. Better results, however, were apparent from a few meetings with groups of tutors and this seemed to indicate the methodology of future training . . .
>
> We decided on a programme of seminars for tutors and developed a teaching model to present to, discuss and simulate with, the tutors . . .
>
> We developed an approach which aims at weaning the student and tutor away from traditional classroom methods so that the student can use techniques which will enable him to develop into an independent learner.
>
> (Adler 1974, p.10)

In this approach the SACHED staff tried gradually to move both students and tutors from their standard lecturing approach to one of providing guidance. They suggested that both staff and students, whose experience was of much more orthodox classroom teaching, could move only gradually to a different approach to learning.

These two contrasting models from RSM and from SACHED suggest alternative ways of providing support to students who are outside school and cannot attend some sort of institution every day. Both models demand a change in the role of the teacher or tutor and, as has been seen, both suggest that it is essential to train them in their new role. It is also necessary to write teaching materials which take account of the way students will use them, and of the job which falls to tutors. Undoubtedly there are other ways of giving support to students at

institutions quite different from RSM or SACHED. But we are short of reported experience and the experience from SACHED is more limited than it might have been: some of their work was cut short when key members of staff were arrested and banned by the South African government.

There are many correspondence students for whom neither model is adequate. Where students cannot attend a centre once a week, or once or twice a month, then they will face far more severe difficulties than those of the RSM and SACHED students. Even though many distance-teaching organisations arrange occasional residential courses for their students, these are of limited value if they are at long intervals, or far away: student problems will often not wait for a termly residential course. Both the Dominican Republic, and the urban areas of South Africa which house most of SACHED's students, are more densely populated than most parts of the third world. Where population densities are lower, and distances between students are greater, the problem of face-to-face support is that much more severe.

Both RSM and SACHED developed their support structures outside the schools. There were good reasons why they should do so but this may not be the best model for others to follow. It is a long way from Henry Morris's version in which the schools' job is to give help, support and guidance to anyone, inside or outside the walls, who needs education. If his vision could be applied to the needs of correspondence students in the third world, taking account of the experience of organisations like RSM and SACHED, then one might have a better support service than anything which at the moment exists.

Alternative schools

Ordinary secondary schools demand a lot of resources. Usually they have buildings far better equipped than primary schools, employ better qualified teachers at higher rates of pay, and have more favourable staffing ratios. As we saw, the cost of all this limits the number of schools that can be provided. In a number of countries educators have therefore experimented with the idea of an alternative secondary school. Usually such schools try to teach the same curriculum as regular secondary schools, but manage with fewer resources and less well qualified staff. Distance-teaching methods have often been used to help support such schools.

Brazil, Malawi, Mexico and Zambia have in common that each has set up a system of alternative secondary schools for adolescents or adults. All use broadcasts and printed materials, under the daily supervision of monitors, to offer secondary-level courses leading to examinations. In Brazil the examination, the *madureza*, is designed for

adults and equivalent to secondary school qualifications. In the other three countries, students take the same examinations as children in school. In Mexico students attend centres during the day; in Brazil they do so in the evening, while in Malawi and Zambia some attend during the day and some during the evening. The method and the hours of broadcasts vary. The Mexican Telesecundaria uses television, and each class watches six sessions of 20 minutes each a day. All the others use radio, and for shorter periods. In Brazil the broadcasts are limited to five hours a week and in Malawi there is a daily broadcast of 45 minutes.

In all these alternative schools, monitors, or untrained teachers, supervise the work of the students but, at least in theory, do not teach them. In many cases they are primary school teachers, although they are working at secondary level. In Mexico the tutors, described as co-ordinators, are, at least in theory, given a three-week training and also get a teachers' guide for all lessons; it seems that they are not trained in the other projects.

Telesecundaria — Mexico

Richard Hooper described the Mexican Telesecundaria, which brought secondary education to the remoter parts of Mexico where there were few proper secondary schools, in 1976:

> Telesecundaria began life ten years ago as a pilot CCTV [closed circuit television] operation. In January 1968 it started broadcast operations to 6 500 pupils in eight states. This year, it is reaching 61 000 pupils in sixteen states.
>
> The basic philosophy behind Telesecundaria remains unchanged. Many rural areas are not able to support a conventional secondary school. Instead, television secondary schools ('teleaulas') are set up by local community groups. Classes averaging 23 pupils (the normal secondary schools have a ratio of 1:55) are taken by 'co-ordinators', who are ex primary school teachers (that is to say, generalist rather than specialist teachers). Eighteen television programmes are broadcast each weekday between 8.00 a.m. and 2.00 p.m., providing six programmes for each of the three grades in secondary school. Thus, each of the six periods has a programme at its centre. Television provides direct instruction, not enrichment/motivation, as for example in the open systems use of television already described.

> The evaluation of the Telesecundaria system, carried out by Stanford University in 1972/3, showed that academic achievement was no worse than in conventional schools (some Mexicans told me wryly that this was faint praise indeed!) and that Telesecundaria cost substantially less (25%). The Stanford evaluation report was a considerable help in countering strong criticisms of Telesecundaria which had been voiced publicly from its early years, and in ensuring its survival and expansion. The local support for the Telesecundaria system, as I was able to experience in visits to three 'teleaulas', is impressive. Yet in Mexico City, the system is barely known. Support for Telesecundaria seems to grow in direct proportion to the distance from the Federal District of Mexico City!
>
> Telesecundaria . . . is fulfilling a significant objective in Mexican education. Some 50 000 secondary school pupils have graduated to date, who would either have not been able to enter secondary school or who would have migrated to the urban areas where secondary school was available. At a time of concern about uncontrolled urbanization, Telesecundaria is clearly relevant.
>
> (Hooper 1976, pp.127-8)

Telesecundaria based its teaching on television but that is not essential to this model. Two features are common to most examples of it. First, the actual teaching comes from outside the institution where the learners meet. In Mexico, the teaching was brought into the classroom by means of television and print; in other places radio has had the same role. Second, projects of this kind have usually been seen as an inferior version of secondary education. In Zambia, for example, where young people can study in supervised study groups, on something like the Mexican model, it is the young people who do worst in the primary school leaving examination who go to the study centres. Those who do best at the examination go to regular secondary schools. Thus the model usually means that children with the greatest educational difficulties are taught by less qualified teachers and with fewer resources.

In the circumstances it is not surprising that the teaching is often uninspired and the curriculum a worn carbon copy of what is done in the regular schools. The supervisors or monitors are not in a strong position to introduce a new curriculum. Although in theory their role is one of guidance — similar to that of the elbow teachers of SACHED — it may in practice go little beyond a custodial one. Similarly, students, anxious about their educational prospects and desperately seeking the

formal certificate, are not in a strong position to seek anything except the narrower examination courses.

The attraction of such a system for students is that it provides at least the appearance of an opportunity for secondary schooling. The attraction for governments is that it makes possible some expansion of secondary education at a lower cost than usual. Both considerations are important in Malawi where a system of study centres mirrors that of the Mexican Telesecundaria, except that they use radio not television.

Study centres in Malawi

Since 1966 the Malawi Correspondence College has overseen the development of a system of correspondence centers and night secondary schools providing junior secondary education to students. At present, there are fifty-eight correspondence centers and sixteen secondary schools enrolling 2 881 paying students, equal to one-third the enrolment in regular junior secondary schools. Actual enrolment in centers and night secondary schools is often higher than the number enrolled in a particular year because of students who repeat or students who enrolled in the previous year but could not find a place. The centers usually consist of two classrooms (for the first and second years of junior secondary education) with ten to fifty students per classroom and no equipment other than furniture, a blackboard, and a radio. They are located throughout the country, predominantly in rural areas.

Centers are normally housed in simple school buildings, often constructed by the community next to a primary school, and frequently accompanied by simple housing facilities for students and teachers. In some cases, the centers use primary school buildings available in the afternoon. Night secondary schools meet in the evenings in the premises of regular secondary schools and are usually staffed by secondary school teachers who are paid directly by the college for overtime work.

Attendance in the centers and night schools is available to any student who has completed the primary school leaving certificate examination and who can pay an annual fee of 22 kwacha (K) to study six subjects. The fee entitles a student to the lessons, all necessary textbooks, marking of tests by qualified teachers, a daily radio broadcast of forty-five minutes, and free attendance at a center or night secondary school. Many students travel from remote villages to attend MCC centers or night schools, and live in nearby towns in makeshift dormitory quarters or private houses.

(Wolff and Futagami 1982, pp.92-3)

Visitors to alternative schools like these have not generally been impressed with the quality of the education they offer, and confirm that

it is often pedestrian and humdrum and tightly linked to the examination syllabuses. But, as Richard Hooper suggested, it may not be much worse than comparable secondary schools. And it may be cheaper: as we shall see in Chapter 6, in Malawi these schools look cheaper than boarding schools, though dearer than day schools, as a way of getting people through their examinations.

How could such alternative schools be strengthened and improved? There are two kinds of answer. First, various modest and practical steps might yield considerable benefits. Telesecundaria's practice of training its co-ordinators or monitors may be one reason why it appears to be more successful than its equivalents elsewhere. Then, clearly, the quality of the materials could be improved: in Mexico the quality of the broadcasts has been criticised, while in both Malawi and Zambia correspondence lessons could be improved markedly if there were a more generous programme for revising and rewriting them. Results would probably be improved if the number of broadcasting hours were increased for institutions like those in Brazil, Malawi and Zambia.

But, second, more dramatic improvements and changes would depend upon a shift in the nature of secondary education. If one could relate the practical experience of these alternative schools, which for all their faults and with all their difficulties do succeed in getting people through the examinations they want to pass, with the ideas of a different sort of education proposed by the Brigades and village polytechnics, then one might have an alternative which was more than a second best.

Improving schools

Distance-teaching methods have been used to broaden the curriculum of schools for many years. Earlier this century, as we saw, many rural high schools in the United States could not employ a wide range of subject specialists. Rural children thus had a worse chance of studying some subjects than those in towns. In an effort to reduce that sort of inequality, many schools used 'supervised correspondence courses' in which children worked on correspondence lessons, under the supervision of a school teacher who was not a specialist in the subject studied, but with the correspondence lesson prepared centrally. More recently, distance-teaching methods have been used to change the curriculum, as well as to introduce the less common subjects; they have used broadcasting as well as print to do so.

That early experience, coupled with the more recent work in Samoa, El Salvador and Nicaragua, shows that distance teaching can be effective as an agent for change and development in school.

But the experience is not all one-sided: a number of projects to

change school curricula and methods of teaching have foundered on the opposition of teachers within them. There is a key relationship between the teaching materials and the teachers, and a contrast between the use of distance-teaching materials and the conventional use of educational broadcasts. In the past, educational broadcasting, as developed by the BBC in Britain, for example, offered material to teachers which was subservient to the teacher and firmly under the teacher's control. As a result, broadcasts were for enrichment, for illustration, for fun, but not for teaching the hard core of a subject. Similarly, textbooks were to be used under the guidance of a teacher and not as a substitute for one. That model clearly will not work where mass media are used, mainly because the existing teachers lack the knowledge or the skill to teach a new curriculum, or in a new way. An alternative model is needed where distance teaching is to make major changes to a school. That model needs to ensure that teachers are prepared to use teaching materials, to make it convenient for teachers to use them, and to avoid threatening their status.

The more successful projects have maintained close contact with teachers in the classroom. The Mauritius College of the Air tried to do this.

Mauritius College of the Air

The College was set up by IEC, for the Mauritian Ministry of Education. Its function was to offer courses, using print and broadcasts, both for private students out of school and for students in school. Secondary education in Mauritius at that time was dominated by private secondary schools, staffed by untrained teachers. Often these were young men, who had recently completed a Higher School Certificate (taken after seven years of secondary education), and who were now teaching to School Certificate level (taken after five years of secondary education). Tony Dodds, who launched the college, describes the system they developed.

> At the center of the system is the printed course. This consists of a number of units, which represent the work that should be covered in a week. Each unit includes a series of lessons following a similar pattern unit by unit. The lessons cover theoretical work, exercises, drills, practical work, notes on the content of related radio or television programs, and projects or

assignments arising out of them. Most units contain one assignment that needs to be checked or marked by the teacher, as well as self-assessment tests. In its first year, the MCA followed the model of a correspondence course fairly closely and set up a system of sample marking of assignments by outside part-time tutors. This was found to be very expensive, and it did not provide the information about general progress that it was intended to give. In later years, the MCA left the marking of assignments entirely to the classroom teachers and relied on its contacts with the teachers and regular visits to schools by senior tutors to provide the necessary information on how the courses were being used . . . The lessons follow the format of a correspondence course in that they speak directly to the student and guide him step by step with detailed instructions through the process of learning, practising, and revising what is put in front of him. An important characteristic of the printed materials — and indeed, of all aspects of the course — is that they have been written in Mauritius for Mauritian students. Every effort is made to ensure that biology or mathematics or woodwork or English is taught in the context of the Mauritian environment . . .

Television series have accompanied most of the courses. People throughout Mauritius have access to television, although only a limited number of families have sets in their homes . . . Because most secondary schools are usually drab, it was decided to use television to brighten and enliven the business of studying. To do so, schools had to be provided with television sets, at first on loan, then on a subsidized basis . . .

The major difference between the MCA courses and courses for private students is that the MCA students do most of their studying in class with a teacher present. The teachers are usually with the students guiding them through the courses, listening to or watching the broadcasts with them, leading them into the assignments and projects, and correcting their work as they go. All of the courses' distance-teaching elements have, therefore, had to provide for teacher-led activities. The MCA has been determined to involve the teachers in the courses and to win their support for the teaching methods. This has been achieved mainly by careful and integrated liaison with the teachers throughout the courses. Sometimes, specialized teachers' notes have been issued, explaining the content of the programs and their relationship to printed materials, and suggesting ways to stimulate active learning. Occasional seminars for teachers have also been held to introduce them to the materials, give them a

> chance to preview programs, and train them in the practical work they will have to carry out with their students. The last, and possibly most important, part of the liaison has been regular visits to schools by tutors and by the liaison officer to observe classes and to discuss problems with teachers and students. The continued use of the courses in a very high proportion of classes, particularly in the less well-endowed schools, confirms that the teachers have generally welcomed and use the MCA courses.
>
> (Dodds 1982, pp.106-8)

It would be wrong to draw too firm conclusions from the Mauritian experience. After the first few years, the Mauritius Institute of Education took over some of the support work for schools and there is no up-to-date data on how the delicate relationship between a materials-producing centre and the schools has worked out. The Mauritian experience, too, is with under-qualified teachers: we are short of information on how to use distance-teaching methods to change the curriculum with the support of trained and well qualified teachers. But all the evidence is consistent in suggesting that, if we want to improve schools, we need programmes of an adequate quality, we need to train teachers in their use, and we need a system of communication so that we can get reaction back from the teacher to those making the programmes.

There remains much that we do not know. Distance-teaching materials have most often been used in school to help with part of the curriculum, leaving the rest to be taught in a more conventional way. That use makes two assumptions about the teacher. It assumes, first, that the teacher's methods are acceptable and that it is his own specialist knowledge which needs to be supplemented. And it assumes that a teacher can readily switch between his usual role and the slightly different one where he is supervising the use of materials prepared elsewhere, or helping his students with them. The assumptions are bold ones, especially where distance-teaching is being used to improve education in schools which are already recognised as being sadly inadequate.

Conclusion

We have looked at three ways in which new techniques can expand or improve education. All rely on using print or broadcasts to carry the main burden of information — to do the job of teaching about subject matter which has traditionally been central to the teacher's role. All assume that most students at this level need some kind of face-to-face

support as well as printed or broadcast teaching materials. And so all prompt similar questions about the role of face-to-face study in relation to materials. While the three approaches vary, they all impose the demand that teachers working with distance-teaching materials will change their approach and style of work. They all assume, too, that good materials exist — the theme of Chapter 5.

Chapter 5: Mass media for secondary education

A successful distance-teaching programme demands good materials as well as face-to-face support for its students. The materials may be of various kinds, including print, radio, television and possibly sound or video recordings. Programme managers need to ensure both that materials are of the right quality and that they are used: the best programmes in the world will have no effect if they are rejected by the teachers or students for whom they are designed, or if they never reach their audience. This chapter therefore looks first at questions of production, and then at questions of use.

Early decisions have to be made about the media to be used in any distance-teaching programme. Print is almost always important. Even with ample broadcasting time, teachers usually want to explain some things on paper, even if it is only the time and arrangements for broadcasts, and students like to have a permanent record in print. Radio and television, distributed either over the air or on recordings, are often important. Broadcasting lends an immediacy and excitement to education and may overcome some of the impersonality and isolation which correspondence courses can generate when used by themselves.

One of the first decisions, therefore, concerns the choice between radio and television. (If a country has no television, the choice is easy.) That choice has been widely discussed elsewhere and our concern here is with the narrow question about which to use for secondary education. Three factors will guide the choice. First, there are no intrinsic merits in one medium rather than another and you can use any medium to teach any subject (*cf* Chu and Schramm 1968, Trenaman 1967). Although it is not a visual medium radio, for example, has been successfully used to teach art and to teach mathematics. Second, you often reach different audiences with different media. In Britain, for example, you will often reach a bigger, and a more varied, audience with television than with radio. In contrast, in many developing countries, you reach a much smaller audience with television and may only reach an urban and not a rural audience. Third, radio is simpler and much cheaper to produce than television. Television can be from 5 to 30 times as expensive as radio.

Producing broadcasts

Much of what has been written about educational broadcasting applies to broadcasting at secondary level, and general guides to production are a better source of ideas than this broadsheet. Good educational broadcasting, appealing to the eyes or ears of our students, is needed. But most such broadcasting has been designed to support or supplement the work of the classroom teacher. Indeed, since the early days of schools broadcasting, many educational broadcasters, as we saw, have been adamant that they did not want to take the place of the classroom teacher. More recently, however, a small number of projects have used broadcasting for direct teaching, taking the place of teachers or taking key functions over from them. Broadcasts of this kind are important both for improving the quality of education within schools, and for extending education, by reaching students outside. Either audience may need to use broadcasts for learning rather than for enriching their study. As a result, the style of broadcasts may be quite different from that of more traditional educational broadcasts. That change has implications for the makers of programmes, and for those concerned with their use.

The programmes may demand very much more active participation than is usual in most broadcasts. The radio schools of Latin America, for some years, broadcast radio programmes in which listeners were expected to work at their books or their blackboards as the programmes went on. Background music was sometimes used between explanations or instructions given by the radio tutor, in order to give time for students to react to what they had heard. This principle, of frequent activity by the student, was taken further by the Radio Mathematics Project in Nicaragua. It remains a sufficiently unusual use of radio to be worth looking at in detail.

Radio Mathematics in Nicaragua

The pre-revolutionary government in Nicaragua, together with the United States Agency for International Development (USAID) ran a programme from 1974 to 1979 in mathematics teaching by radio. The aim was to raise the quality of teaching in primary schools. The methods were similar to those used in television projects at secondary level, but with the direct teaching done on radio, not on television. One of the unusual features of the radio lessons

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was that children were asked to respond directly to the broadcast, and to do so out loud as often as once a minute. This is how the project staff described the broadcasts.

> A daily mathematics lesson . . . lasts one hour. Project lessons occupy the full hour, using the first half hour for the radio lesson and the last half for activities directed by the teacher. The two portions of the lesson are usually connected by a *transition segment*, which is a set of exercises introduced by the radio program and completed by the children after the program terminates. The mathematical content of the full hour is specified by the Project; the post-broadcast portion is presented to teachers as a list of suggested activities contained in a teacher's guide. Teachers are free to use the guide as they choose, and we do not assume that children will have studied the material assigned to the post-broadcast portion of the lessons . . .
>
> Project radio lessons are composed of instructional segments and entertainment segments, and these are clearly distinguished from one another during preparation of the lesson. (The distinction may not be as sharp for the listener: 'Entertainment' segments sometimes have mathematical content and 'instructional' segments are sometimes entertaining to listen to.) . . . Each segment consists of a set of exercises whose mode of presentation is specified by the curriculum developer. In constructing a lesson, the curriculum developer selects an appropriate set of segments for the radio and postbroadcast portions of the lesson . . .
>
> With the exception of a few topics that required extensive use of materials, for example, measurement, all initial teaching was placed in the radio portion of the lesson. Thereafter, practice was assigned to either part. Most frequently, oral drill was given by the radio and sets of ten or more written exercises were reserved for the postbroadcast portion of the lesson . . .
>
> *Types of student responses*
>
> . . . Maintaining a high rate of student response is a central feature of the lessons designed by the Project. The radio lessons elicit several types of *oral responses* from children. Although the radio cannot actually respond to children in a classroom, it is possible to structure dialogue so that children's oral responses can be anticipated. In this way a type of interaction between a radio character and the children can be established that engages their attention. Oral responses include such 'conversations'

between the children and radio characters, answers to mathematics exercises, recitation — counting by rote or reciting the days of the week — and singing.

We often found it useful to ask children to delay answering aloud typically by asking them to *think* about an exercise, pausing, and then asking for the answer. We call this a *deferred* response. We used the deferred response to give all the children an opportunity to think of an answer without interruption by the students who were able to respond quickly.

(Searle, Friend and Suppes 1976, pp.99-101)

Although this project was at primary level, much of what it learned can also be applied at other levels. Even with primary school children, for example, project staff found that children did not want an entertaining story in order to sweeten the mathematical pill. In early lessons they included stories to engage the attention of children but found that these served no useful purpose, and later abandoned them. They summarised what they learned about writing radio scripts in these terms.

1. It is not necessary to repeat oral exercises. We found that children are able to respond with only a single presentation of an exercise.
2. When presenting exercises orally, it is preferable to give the general direction first, the numbers last. For example, we say, 'How much is one plus two plus four,' *not* 'One plus two plus four is how much.'
3. When children recite — numbers, days of the week, and so on — it is necessary to establish a rhythm for them. It is also important to tell them clearly where to start.
4. Children must be told not only when to start an activity, but when to stop. They do not automatically sit down after being asked to stand up, or put down their pencils when they complete an exercise.
5. Children should not be misled into thinking they know the task you are presenting. If you want them to circle the cat, do not say, 'Look for the horse; next to the horse is a cat; circle the cat.' They will circle the horse.
6. Children should be kept active. We try not to let more than 60 seconds go by without asking them to do something.
7. Instructions should be phrased in the most straightforward manner possible with simple words and short, syntactically simple sentences.

However, given a choice between a shorter sentence and a simple syntax, one should choose the simpler syntax.

8. Instructions should be shortened as children become familiar with them. For example, at first we used the phrase *encerrar en un circulo* (enclose in a circle). By Lesson 96 (Segment 4) this has become *encierren* (circle).

9. Strict vocabulary control is not necessary because the language is verbal, not written. It is acceptable to use words that may be unfamiliar to some children, provided the child need not understand the word to follow the instruction.

10. Instructions may differ for oral and written responses. When asking for oral responses, one can ask more difficult questions and make the instructions more concise. For a good oral response, only one-third of the children need be able to respond (and hence to understand the instruction). At first only the better students give the answer, but they serve as a model for the other students who learn by this means what is expected of them.

11. There should be no background sound during the presentation of directions or exercises and silence should be maintained while children are given time to respond.

(*ibid.*, pp.106-108, shortened)

It would be dangerous to generalise too far from the Nicaragua experience. It was teaching only one subject, and with children younger than many of those in secondary schools. And it was more generously financed than many projects. But it did work out a formula for direct teaching by radio and used this with apparent success not just with students outside school but within school, and with the support of teachers. The radio programmes were made by a team, in which subject specialists and producers worked together and were supported by a group of field workers who regularly visited schools and reported back to them. Co-operation at two levels, between curriculum specialists and broadcasters, and between broadcasting teams and teachers in the schools, was important in the project's success: we return to that theme below, as such co-operation is necessary both for the making of materials and for ensuring that they are used.

Producing printed materials

Printed materials also usually demand team work: it is a rare individual who could produce a complete course in any secondary subject. And, just as direct teaching broadcasts are different from broadcasts for enrichment, so there are subtle differences between distance-teaching

materials and textbooks. For distance teaching, the materials often need to be able to stand on their own, with fuller explanation and a greater wealth of example than the average textbook. Even with the promise of face-to-face support, or a broadcast link, print is central to much distance teaching and students expect that their text will, if necessary, be able to stand alone as a guide through their subject.

Distance teaching's dependence on print means that there is a set of questions which educators must ask about the production of printed materials. Some of these are strictly educational: it is essential, for example, that in multi-media teaching the different elements fit together, so that printed matter and broadcasts relate properly to each other. Other questions are more narrowly administrative, but demand adequate replies if our teaching is to be effective. The key questions are: do we produce our own materials or can we borrow them from somebody else? If we are to write them, who does the writing and how should that be organised? How are writers to be trained?

Sometimes it is not necessary to write courses from scratch. Many distance-teaching institutions have used materials prepared by other organisations which are teaching students similar to their own. In the United States, for example, a number of universities used to offer high school courses both to individuals and to secondary schools which wanted to expand their range of subjects. The number of students wanting to study the less popular subjects, or less popular options, in any one State was so small that it was not worth the while of a single university to prepare a whole slate of courses. As a result, universities often borrowed courses from the two universities, Nebraska and Wisconsin, which had large correspondence departments. Similarly, when the Botswana Extension College was beginning work, it had neither the time nor the resources to write all the secondary examination courses for which there was a demand. As a stopgap measure, it arranged to borrow courses from the equivalent government college in Zambia.

Where good courses are available, this is an attractive option to the hard-pressed administrator. (And, even where courses are not suitable for use locally, it is worth borrowing copies in order to spark off ideas from your own writers, and see how others have solved problems similar to your own.) But there are dangers in it: a course from another institution may not quite fit the needs of your students, even if it is designed for a quite similar group. The more closely it is geared to the particular and local needs of one audience, the less well it will fit those of a different audience, a few hundred miles away. The Zambian economics course, for example, was studded with examples drawn from the Zambian economy, which made it very good for Zambian students, but less good for those in Botswana: [illegible]re ordinary, less localised,

and from the Zambian point of view worse, course would have served their needs better. If you cannot borrow a course, then you have to get it written, and have to face a whole series of questions about who does the writing. Before facing them, however, it is worth considering whether an institution should write its courses by itself or in co-operation with other colleges. There may be other people, facing demands similar to your own, with whom you can co-operate and share the writing costs. In southern Africa in the mid-1970s, for example, government colleges in Botswana, Lesotho and Swaziland were all preparing correspondence students for examinations for the same syllabus of the same examining board. Their students had strikingly similar cultural and, in the case of Botswana and Lesotho, linguistic backgrounds. The number of students in each country was fairly small, so that it was difficult for any one college to justify spending resources on the development of a full range of examination courses. It therefore made sense for the colleges to co-operate in the production of courses which could be used in all three countries.

That kind of co-operation can have advantages for a college, but does also impose obligations on them. It means that the college's educational staff must have faith in material produced elsewhere, and it may mean that material has to be pre-tested in more than one place. There has to be a clear agreement about finance, about printing, and about copyright. And there needs to be agreement about apparently minor questions, such as the design of the cover, as misunderstandings about minor issues can prejudice the success of a major course development. On the other hand, it is possible for organisations to co-operate on a single activity, like the production of a course, without its involving wider agreements or broader political issues; the agreements in southern Africa were worked out amicably, by the institutions concerned and with the backing of their ministries of education, at a time when the much larger question of running a federal university was proving insoluble.

Colleges more often write their own materials than borrow them, or develop them co-operatively. Some use full-time writers, some part-time. Some have writers working individually while some create course teams. Some courses are written over a long period while others are written in a short, intensive burst of activity.

No matter who is employed, or for how long, a course writer needs certain basic qualifications. He needs to know the subject matter which he is to teach. And he needs to have experience of teaching it face-to-face, so that he understands the difficulties which learners have in studying it: his job is to translate the best face-to-face teaching into something which will work at a distance. Beyond this, he needs to be someone who can work in a team, and change his method of working in

the light of criticism from other members of the team or of students.

There are apparent advantages in employing full-time course writers. They are, as employees, more directly under the control of a distance-teaching college than any outsider would be. They can see a course through all its stages, from the early ideas, through early drafts and testing, to its publication and use with students. But there are disadvantages too. It is difficult to tell, in advance, whether a teacher will be any good as a course writer. If you appoint to a full-time post a writer who then proves to be no good at writing, you may find it very difficult to employ him to do anything else. And, in a small organisation, there may not be a full-time job on any one subject, once the course in that subject has been written. If this is the case, then the best compromise may be to employ a full-time course writer but to do so on a contract basis. In either case, it is vitally important to ensure, as best one can, that a full-time writer can produce good materials, and produce them at the right speed, before he is appointed.

When the National Extension College began work in Britain it could not afford to employ full-time course writers and so relied exclusively on part-time writers, employing teachers whose reputation suggested that they were lively and imaginative interpreters of their own subject. It proved easy to find such people: NEC was working in a country with a long educational tradition and one with a very large teaching profession. In many third world countries it is far more difficult to find part-time writers who have the time to devote to course writing. The kind of person who would be good at writing a course is usually already heavily involved in his own teaching, in sitting on subject panels for his ministry of education, in marking examinations, in voluntary activity and so on. The pressures on the intelligentsia of a third world country are such that part-time work is very difficult for its members. African colleges have, for example, often found it difficult to recruit part-time writers or, where they have been recruited, to ensure that course lessons are delivered on time. Thus, while there are advantages in employing part-time writers when these are available, it is unrealistic to assume that this will be an easy policy to follow in many countries.

It is necessary next to consider how a course is written. In many cases one or two individuals will write the course by themselves. The main help they get will come from a course editor, and their main discussions about teaching techniques will be with the course editor. (We assume here that the editor will have a wider function than that of a copy editor, and will play a major role in the pedagogical preparation of a course, as discussed in IEC's Broadsheet *Editing distance teaching texts*.) But some courses are written by groups of people, either working together in a course team over a long period or, more intensively, over a very short one.

The Open University in Britain has pioneered the use of course teams which work together for a year or more. The university uses printed lessons and broadcasts as its central teaching media and a course team is concerned with all the media used, not just with print. Although the university's experience is of higher education, its development of the course team is of potential importance for other levels of education as well. Each team consists of a number of subject specialists, together with an educational technologist whose function is to advise on the educational methods to be used in the course. The team's function is usually to produce not just the printed materials but also the broadcasts, and any other teaching elements that go with them, so that, where there are broadcasts, the broadcasting producer is also a member of the team.

The Open University's course teams are larger, and have more resources, than many groups of people preparing materials in other institutions. But the idea of academic co-operation, and the principle that subject specialists and others should together develop a teaching package, is important and of wide relevance.

Many authors of educational material are forced to write much more intensively than the year or more which the Open University allows for its course teams. Some writers, and some institutions, have used a more intensive course-team approach in which people come together for between one and three weeks to produce a course between them. This technique, christened a 'writing circus', was developed in southern Africa, and used by writers in Botswana and Swaziland to produce mathematics courses. Two of the instigators of the circus idea describe it.

A mathematical circus

This paper is a description of the way in which one single correspondence course was produced for use in Botswana, Lesotho and Swaziland.

The course concerned covers the mathematics syllabus of the University of Botswana, Lesotho and Swaziland Junior Certificate examination. This syllabus is normally covered by school candidates in three years.

The correspondence materials were written in three intensive writing weeks. Each week produced enough written material to cover the work normally done by school students in one year. After each week an editor processed the written materials, standardized them where necessary and passed them on to be printed. The first

intensive writing week took place in Swaziland in December 1973, the second in Botswana in March 1974 and the final one in Lesotho in April 1975.

The major decisions concerned with layout, breakdown of the materials into units, textbooks, other aids to students, and even a plan for the presentation of each unit were worked out before the first group of writers met. They spent the first two hours confirming and becoming familiar with each of those decisions. As there were only three people involved, and they had already consulted each other on the decisions, it wasn't difficult to achieve agreement.

There were other factors that probably helped in this first stage:

1. The three main writers knew and respected each other,
2. two had taught the syllabus in schools for many years and had helped to re-present for local consumption one of the textbooks which covered the syllabus,
3. two, not the same two, had a great deal of prior experience writing correspondence courses,
4. the three writers were attracted to a layout that already existed,
5. each was prepared to go with a majority decision on disputed points,
6. a series of textbooks exists (SMP) which had heavily influenced the syllabus, and SMP had also run training programmes for teachers in the three countries.

In what follows we have divided the organization of the writing into different stages. In reality these stages were not followed in sequence as we have described them. However, they were all reached at some time during each session.

Familiarization

Each week began with a familiarization session. This was usually a talk describing the aims of the writing week and a breakdown of the actual work into units of writing. (These were written up and circulated before the second and third circus.) Everybody asked questions and discussed different aspects of the breakdown of tasks. Then a timetable was worked out and units were chosen by writers.

Writing techniques

The structure and breakdown of each unit was discussed and writing techniques initiated. The most constructive approach was to set the behavioural objectives of the lesson and encourage writers to teach to objectives. Our particular lesson structure involved:

1. a list of equipment followed by
2. an introduction preparing the student for the lesson or recalling past knowledge he would need for the lesson;
3. a list of behavioural objectives in question form;
4. a body of the lesson, which had questions with immediate answers, references to the textbook, exercises with answers at the end of a study and diagrams;
5. a test on the work of the lesson and
6. a summary of the work involved in the lesson.

The writing begins

Writers then went to different parts of the room or to different rooms with books, equipment and materials and wrote a lesson, or as much of a lesson as they could in three-quarters of a day. It was basically a first attempt for people to get their ideas down and try to put shape to them.

As individuals decided what their behavioural objectives were, they wrote them down on a board for the others to see.

An evaluation session

At the end of the first writing stage, everybody came together and divided into groups of two or three, where appropriate. Each group included at least one very experienced writer. Lessons prepared were circulated between numbers of a group so that in one group each person read the lessons of the others and noted down their comments. All the participants then came together and discussed each lesson in turn. This was the most productive session and everybody learned from it.

Integration and presentation

At some point during the early sessions somebody, usually the editor, gave details about instructions to be laid out for typists, artists, etc. This was done so as not to interfere with the first writing attempts. Later, the first attempt was rewritten and evaluated again. Usually at this stage the lesson was ready for editing, and if time allowed, the writer did a final rewrite to get the lesson ready for the typist and artist. When each writer had completed one lesson, he started on his next choice, working at his own pace but following the same pattern of writing, evaluating, rewriting.

What is involved?

The three circuses were very different, for a variety of reasons.

Briefly, the growth of institutions wanting to share the course brought more participant writers, and by the third workshop, this allowed more normal working hours. So the number of writers increased with each circus and, naturally enough, the working time spent by each writer decreased, for the total workload for preparing each year's course is about the same.

Circus one: 3 writers, 6½ days, 13 working hours per day. Total working time 250 man-hours.

Circus two: 5 writers, 4½ days, 13 working hours per day. Total working time 260 man-hours.

Circus three: 9 writers, 4½ days, 8½ working hours per day. Total working time 245 man-hours.

Conclusion

As these three circuses have shown, a course can be written in an extremely short time. It involves these things:

Before writing starts

1. an agreed syllabus or list of subject-matter for the course,
2. an agreement about the textbooks, if any, to be used,
3. a team of writers who are willing to work co-operatively and can quickly agree an order of topics and who writes what,
4. writers who will accept a course and lesson structure based fairly closely on one proposed by the workshop organizer, and modified by consensus of writers' views.

During the writing

1. writers willing to submit their drafts to colleagues' criticism and rewrite or modify in the light of supported criticism,
2. willingness to work continuously without a change for longer than normal office hours,
3. a place where writing can go on undisturbed outside, as well as inside, normal hours.

(a shortened version of Leech and Murphy 1976)

There are significant advantages in using the circus approach and it enables courses to be written very quickly. IEC has used the same method in preparing courses for the Namibian Extension Unit. In a three-week workshop, three separate teams produced a 40-lesson mathematics course based on an existing course from Botswana, 36 lessons of an English course, and a manual for training group leaders. Our experience there, and experience in southern Africa, however, makes it necessary to put in two reservations about the method. First, it makes more work for the editor: the pressure to produce material at speed means that a lot of detailed work is left till the next stage. Second, it is difficult to work out the right balance between training and

production in a circus which has these two aims; training is likely to suffer in the pressure for production.

The training of writers poses the remaining key question on the production of materials: how are they to be trained? For, while writers should know their own subject, and know how to teach it in the classroom, they will seldom have experience of producing written material. They are likely to need help on, for example, the presentation of their subject matter, on techniques for writing simply, and on ways of testing what they have written. Where a number of writers are beginning to work at the same time, it may be possible to hold a training workshop for them. Where this is not possible, the institution employing them will need to arrange some kind of individual briefing and training session.

We can summarise the issues discussed on the production of written materials in a single diagram, Figure 1.

Distributing and using materials

The finest materials in the world are useless if they remain locked up in an office or are broadcast at a time when no-one can see or hear them. And they are useless if the people for whom they are designed choose not to use them. We need to consider both the way we distribute our teaching materials and the way we try to ensure that they are used.

The easiest way to distribute teaching is with the seven-league boots of radio. If you can get access to radio time, at a good hour of the day, then it should be easy to get information to your students.

But teaching at a distance is seldom in practice as easy as that. Radio is ephemeral and, as we saw, students need print as well. Often, too, one cannot get access to the broadcasting time most convenient for one's students, because of competing demands for peak hours. Or time may be available on secondary and less powerful transmitters. In Australia, for example, where broadcasting and correspondence were first linked, educators can now generally get access only to airtime on VHF FM radio, which can reach only a proportion of their students, and cannot reach those who are most remote. Problems of access are most severe in countries where broadcasting is under strong central control; in Latin America, in contrast, there is considerable freedom to open radio stations and many radio schools run their own. In Brazil, where there are more than a thousand individual stations, they are obliged to carry a certain amount of educational broadcasting. This has made it possible to broadcast a national radio programme to teach at secondary level.

Distributing printed materials presents a different set of problems. In countries with a good postal service, it is possible to use that to get

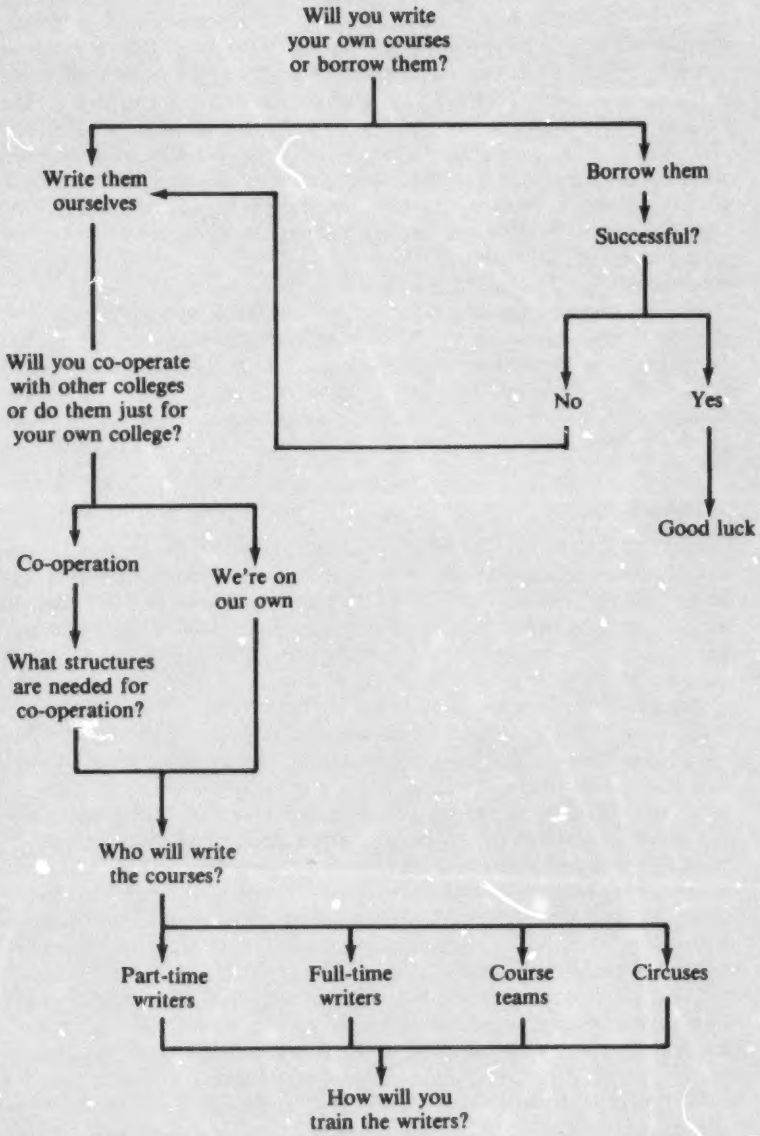

Figure 1: Decisions on course writing

lessons to students. If a country is small, and especially if it is densely populated, it may be practical to distribute lessons by delivery van to schools, or study centres, or pick-up points. The Mauritius College of the Air, for example, distributes materials to schools, for use within the classroom, by means of its own van. But Mauritius is a small island, with 450 people to the square kilometre. Similar methods have been used in the Dominican Republic, with a density of just over 100 people to the square kilometre, but they would be totally unrealistic for Zambia, whose population, like the Dominican Republic's, is between five and six million, but has a density of only seven to the square kilometre.

In a country like Zambia, problems of distribution loom large for the student. Once he has received his lessons, and got his course textbooks, he may be able to continue studying, even if it has taken him a long time to get started. He will, however, have to wait a long time to get feedback on his individual work, if this is to go to a tutor at some central point.

Co-ordination

Where problems of distribution loom largest, problems of co-ordination and of relationships between learners and teachers are most severe. To some extent they can be overcome by the sort of face-to-face support we discussed in the previous chapter. But there are particular problems of co-ordination where distance teaching is used within schools to raise the quality of teaching.

The difficulty here is that teachers are forced into a new relationship with people outside their school when they use distance-teaching materials. They surrender some of the control over the content of their teaching which was previously their own. Communication between those who produce materials and those who supervise their use in the classroom is necessary if producers are to understand the problems of the classroom and if teachers are to find the materials useful. We saw in the previous chapter how the Mauritius College of the Air tried to get these relationships right by having a liaison officer who kept in touch with the schools and with his colleagues at the College. In Nicaragua there was a liaison team with similar functions.

These relationships are crucial. If good educational programmes are to be made, then we need to combine a variety of different skills. And many projects have found that there are particular difficulties in marrying the skills of educators and broadcasters. These difficulties are aggravated when national or linguistic barriers hamper communication. The El Salvador television project is a rich mine of experience.

El Salvador's educational reform

In the mid-1960s the Ministry of Education in El Salvador decided to use television as a way of reforming the secondary school curriculum. They got finance from the United States, which paid for the equipment needed and for a team of educational television specialists. The El Salvador government built a television studio on the site of a teacher training college some 24 km from the capital, San Salvador.

The Ministry of Education quickly recruited teachers as television writers and producers. They selected these people by testing their knowledge of their own teaching subjects and by means of a screen test; between 1963 and 1971 the television staff grew from 20 to 200 people. They also appointed technical staff, but paid them on a lower scale, and provided little training for either group. When, late in the day, attempts were made to give in-service training to television staff, the pressure on them to keep producing programmes was such that they felt they had no time to spend being trained.

Programmes were made by a team consisting of two subject specialists, one television presenter, a producer-director and a production assistant-cum-co-ordinator.

> . . . the teams themselves discovered in the first year of broadcasting that the secret to successful programming lay in a high degree of common planning and preparation for each telelesson. Through experience, the teleteachers and subject area specialists found they had to work closely together if the telelessons, guides, and workbooks were to complement one another. Otherwise, the guides and workbooks, which had to be prepared well in advance of the telelessons, might be geared to concepts that the television teacher might not emphasize in his own presentation. Similarly, the producer-director and production assistant had to be brought in at the early stages of lesson planning to guarantee that the teleclasses planned by the subject area specialists and the teleteachers were possible from a technical point of view. Each newly-formed production team wrestled with such problems of co-ordination during its first year of programming, but by the second year most problems had been ironed out and the teams were working well together.
>
> (Mayo and Mayo 1971, p.32)

While the television programmes were being made, a rather separate group of people were working on the reform of the curriculum. Unfortunately, the two groups were out of phase with each other. Curriculum specialists, arguing that each year's work depended on the previous year's, wanted to start the curriculum with the first year of school. The television staff began at year seven. 'It soon became obvious that the Ministry curriculum writers and ITV subject matter specialists could not establish a fruitful working relationship' (*ibid.* p.41). Problems arose in part because of tensions between ministry curriculum specialists and USAID advisers: the ministry staff thought the advisers took too little account of El Salvador conditions, and lacked experience at the appropriate level of education, while the USAID staff criticised their local counterparts' professional competence. Even more serious than these wrangles at ministry level, the reform was increasing the burdens on ordinary teachers and changing their duties to an extent which aroused serious antagonisms. In due course the teachers involved in the reform went on strike in protest against their changed conditions.

Teamwork, then, while necessary, is not something that comes automatically. It took the El Salvador production teams some time to develop a pattern of working and, from the published accounts, even then there remained difficulties between those at the centre and the utilisation teams who were visiting schools.

Conclusion

Distance teaching makes a variety of demands on educators and administrators. There is no one formula for producing good educational materials. This chapter has shown that there are five issues which need particular attention in using mass media, whether for audiences in school or outside.

First, we need to develop an appropriate style for teaching. This may be different from the style we use for other broadcasts, or for other printed materials: in either case we are concerned to produce materials which will speak directly to our audience.

Next, we are faced with a set of administrative choices about the best way to arrange the production of materials. Most of these demand some kind of team work, but the composition and function of the teams involved will vary from subject to subject, from country to

country and from course to course.

Distribution may cause as serious problems for our learners as production. While distribution by broadcast may be easy, it is often less easy to get broadcasts at the time, or on the transmitter, that is most convenient for our students. And, while broadcasting may solve problems of distributing sound or pictures, it will not solve the difficulties involved in many countries in distributing print, or the problems of receiving feedback from our learners.

Relationships between learners and teachers lie at the heart of much education: the fact of their separation makes it all the more important to cultivate those relationships with sensitivity. While producers and teachers need to listen to each other in any production agency, both need also to listen to the voices of students and teachers beyond their studio or college.

Finally, the challenges faced by distance educators are often new to them, and different from the ones they face in their more regular work as teachers, or broadcasters, or writers. As a result, they may need training in the new skill, or combination of skills, they require for their job. And it is training which is often sacrificed: the pressure to produce new materials to an inexorable timetable is such that training often gets sacrificed to production. We found that was the case in producing materials for Namibian refugees. The El Salvador team found that the pressure to make programmes was such that staff had not got the time to attend training sessions which would teach them how to make programmes. In balancing production against training we can only echo Norbert Wiener's warning that 'the hour is very late and the choice of good and evil is knocking at our door', without being certain which is the lesser evil.

Chapter 6: Success and failure

It is never easy to measure educational success or failure, seldom easy to get firm agreement on a good measure of success. But we can make some limited statements about the effects of distance teaching as a way of improving secondary education, as a way of extending it, and about its comparative costs.

Improving education

As we saw in Chapters 4 and 5, the evidence on using mass media to improve schools is mixed. The project in Samoa folded; that in El Salvador played a part in stimulating a teachers' strike; other grand television projects have closed down or disappeared without trace. On the other hand, there is some evidence that distance-teaching methods can achieve results within schools.

In Mauritius, for example, the early results in English language and in human and social biology showed that 'most schools which enrolled were able to improve their pass rates' (Dodds 1975, p.31). The result in human and social biology is of particular interest as this was a new subject to the schools: mass media were being successfully used, at least on a small scale, for curriculum development. Thus

> First indications suggest that MCA services have helped teachers to provide more interesting and relevant lessons and to make use of more practical project-based teaching methods than were previously used. Some teachers are commenting that with the help of the distance teaching aids provided by MCA they are finding it easier to stimulate response and activity amongst their students, and that this is assisting the teaching and learning processes . . .
>
> These indications, though still tentative and based on incomplete knowledge, would suggest that a child in a school following an MCA course has a greater chance of passing his exam than he would if he were in a non-MCA school of similar standard, that the teaching he undergoes will be more lively and active, and that he will enjoy it more.
>
> (*ibid.*, p.32)

These findings are similar to those of the Radio Mathematics Project

in Nicaragua, where a research team worked for several years on the project and reported on it in detail. Their major findings are consistent in indicating the success of the project and are summarised as

> At all grade levels, students learn the topics taught by the radio lessons better than students learn in traditional classrooms, as measured by a test of mathematics achievement.
> — There is some evidence that radio lessons help rural students overcome the performance deficit they show compared to urban students.
> — Students with radio experience score higher on mathematics achievement tests given at the beginning of the year than do students without prior experience. This advantage is maintained during the school year.
> — Radio mathematics lessons raise the mathematics achievement scores of students with low entering ability as much as those of students with high entering ability.
> — Students studying mathematics by radio perform as well as traditional students on a language arts test, indicating that gains in mathematics achievement are not obtained at the expense of achievement in language arts.
>
> (Friend *et al.* 1980, pp.137-8)

Two notes of caution are necessary. First, as we shall see, both these projects increased the cost of secondary schooling and it is necessary to ask, though difficult to answer, whether the improvement was worth the money spent. Second, early results from Nicaragua suggested that the project might have an effect on success rates in school generally but, as the project developed, this did not occur. It was suggested that the most likely explanation of this was that the teachers had built-in assumptions about failure rates and went on failing a similar proportion of children in each class even if their overall performance was, in fact, improving (*ibid.*, p.233).

Nevertheless, the evidence from these projects is enough to be cautiously optimistic about distance teaching within schools. Success or failure will depend on scale, and on cost, but above all on the extent to which the support of local teachers and administrators is won. Schramm and his colleagues summed up their Samoan experience with

> a series of ifs —
> — If more time could have been taken with the original decision.
> — If hardware preparation had not been permitted to outrun the planning and preparation of software.
> — If there had been time to bring the classroom teachers in.
> — If there had been time for a thorough meeting of minds with the community leaders on the goals of education.
> — If the decision had been to introduce television one grade at a time,

rather than in all subjects and all grades by the beginning of the second year.

- If there had been time to try out and test programs.
- If there had been time to find out what changes were taking place in the classroom teachers in the first half-dozen years of the project, particularly in the first two or three years.
- If there had been time to consider more carefully what might be the ultimate result of bringing in, with government money, a few American commercial network entertainment programs for evening broadcast.

(Schramm *et al.* 1981, pp.193-7)

Amen to that.

Extending secondary education

As we have seen, some children working outside regular schools do achieve results through distance learning. This finding comes consistently from the Mexican Telesecundaria, from RSM in the Dominican Republic and Radio ECCA in the Canary Islands, from the national correspondence colleges in Malawi and Zambia. It comes also from the Air Correspondence High School in South Korea. On the other hand, in many of these projects drop-out rates are high and the quality of education is often low.

Nor is it easy to make comparisons with formal education, even where the projects are aimed at age groups similar to those taught in school. Often, as in Malawi and Zambia for example, the children who have performed best at primary school move on to the regular secondary schools and those who have done less well study at a distance. Little research has related achievement through non-conventional methods to prior educational performance, in an attempt to allow for that factor. In the Dominican Republic, however, it was possible to compare the results of students studying through the radio school with comparable students enrolled in an adult education programme of face-to-face classes leading to the same examination. Here, it was found that at grade 8, equivalent to the second year of secondary education, the radio school students performed better provided the field teachers of Radio Santa Maria were working adequately. Some students went on from that stage to enter regular secondary schools and found that their academic performance was 'equal or slightly superior to that of the class in which they enrolled' (White 1976, pp.76-7).

These results appear to be much better than those achieved in Malawi, where between 13 and 21% of students passed the junior certificate examination, also taken at the end of two years of secondary schooling.

> Despite the uncertainty of the data, the examination results for students in the MCC program are clearly much lower than for those in boarding and day secondary schools, where 87 per cent and 67 per cent, respectively, pass the examination. The MCC centers and night schools, however, are open to any student who has passed the examination for a primary school leaving certificate and can pay the fees. The centers have no laboratories, workshops, libraries, or dormitories. Teachers in the MCC program are usually qualified only at the primary level, whereas teachers with diplomas and degrees predominate in the regular secondary schools. On this basis, the MCC centers and night schools have a satisfactory record, although there is still much room for improvement.
> (Wolff and Futagami 1982, p.95)

Rather better results were achieved by students of the Air Correspondence High School in South Korea. Although these students have to study part-time, and have their compulsory radio programmes late at night or early in the morning, and face-to-face sessions on alternate Sundays, 46% in 1977 successfully completed their high school course and passed their examination (Kye-Woo Lee *et al.* 1982, p.145). Doubtless the social pressures towards examination success in South Korea have something to do with results; the authors also attribute them, in part, to the research and monitoring of the project which have been carried out from its inception (*ibid.*, p.163).

Cross-national comparisons are difficult and dangerous but the contrasting results suggest that the different models for supporting students developed in Latin America and South Korea fit their students better than those adopted in Malawi and Zambia.

Costs

We are on surer ground in asking about the costs of distance teaching. These have been clearly identified, using a standard method of analysis, for a number of projects. The basic facts about nine projects are set out in Table 3. All of these are projects whose aim is to extend secondary education to people outside school walls. In some cases we can state with some certainty that distance teaching is dearer than the alternative. This was the case for the project for upgrading school teachers, effectively at secondary level, in Kenya where the number of students enrolled was too low to justify the high central costs of running the project. In others, like the Canary Islands, distance teaching is clearly cheaper. The evidence from Malawi is more complicated: despite the low success rate, the cost per successful student was less than that of a comparable student in a boarding school, though higher than that of a day school. Then for some projects the evidence is more difficult to interpret: in Mexico, while the cost per student was lower for

Table 3: Costs and success rates: distance teaching at secondary level

Country, institution and date of studies	*Type of project*	*Approx. annual enrolment at time of study*	*Annual cost per student in US 1978 $s*[a]	*Capital included in calculations?*	*Measures of success measure used*	*rate*	*Comparison between costs of distance teaching and costs of orthodox education*
Brazil IRDEB[b] 1977	Secondary	8 000	67	Yes, at 7.5%	Examination passes	37%	D/t is probably more expensive
Canary Islands ECCA (radio school)[c] 1978	Upper primary/lower secondary	23 000	64	Yes, discount rate not stated	Number promoted to next class after 6 months study	72-75%	D/t is cheaper
Kenya Correspondence Course Unit[b] 1977	Teacher training	340-2 900	325	Yes, at 7.5%	Teachers promoted as a result of course	90%	D/t is more expensive
Malawi Malawi Correspondence College[b] 1976	Secondary	3 800	160	Yes, at 7.5%	Examination passes: as proportion of enrolments as proportion of exam entrants	13% 21%	Cost per successful student dearer than for day schools but cheaper than for boarding schools
South Korea Air Correspondence High School[b] 1974-77	Secondary	20 000	68	Yes, at 7.5%	Examination passes	46%	D/t is cheaper
Mexico Telesecundaria[d] 1972	Secondary: use of television to extend range	29 000	235	Yes, at 7.5%	Standardised tests administered to Telesecundaria and conventional	Comparable scores	Cost per student lower ($235 instead of $316) but no

	of schools using under-qualified teachers				school students		information about cost per completion
United Kingdom National Extension College[a] 1965/78	Secondary: correspondence courses for individual adults	7 600	60[f]	Yes, at 7.5%	n/a	n/a	Courses probably cheaper than evening classes, certainly cheaper than full-time classes. Cost per successful student not known.
Brazil Minerva[b] 1977	Secondary radio, print and some face-to-face support for out of school equivalency exam	177 000	25	Yes, at 7.5%	n/a	n/a	D/t is probably cheaper
Canada Tévec 1969[g]	Lower secondary equivalence courses for adults using print, broadcasts and counsellors	25 000	Not known	Not known	Proportion of population of 25-54 enrolled Proportion of enrolled students passing examination	26% over 33%	Stated to be cheaper than in-school alternative ($3m instead of $25m)

Notes

a. Costs generally converted using the deflators in Perraton (1982a).
b. These costs are summarised in Perraton (1982a), where sources are given.
c. These costs are summarised in Perraton (1982b), where sources are given.
d. Jamison, Klees and Wells (1978), pp.217-235.
e. Jenkins and Perraton (1980).
f. This is a cost per course, usually completed in about a year, taking £0.53 = US$1.00.
g. *Direct*, January 1975, p.36.

Telesecundaria than for a regular school, we have no evidence about the costs per successful student which would allow a fuller comparison to be made.

It seems from the figures that there is probably a lower limit on the number of students, below which distance teaching is likely to be more expensive than the traditional alternative. The position of that limit depends, of course, on the sophistication of the teaching methods that are used, and on the extent of face-to-face support given to students. But it looks as if the limit usually lies between 10 000 and 20 000 student enrolments a year.

We have rather less evidence about the use of mass media to improve schools. Generally, improving schools increases costs. Early analyses of the Radio Mathematics Project suggested that it might reduce the cost per successful student by reducing the dropout rate, but this hope does not seem to have been fulfilled. In Mauritius, while MCA courses added to the cost of schooling, they compared very favourably in cost with the available alternative way of improving children's educational chances — to pay for private tuition (Dodds 1982, p.121).

We can, therefore, only suggest that, in considering the use of mass media to improve schools, the educator must make a value judgement, to decide whether the kind of improvement to be expected is worth the additional expenditure. If he is to retain orthodox schools, in their traditional form, and add new resources to them, then the costs will rise.

Chapter 7: Conclusion

We can now return to our starting point and sketch an answer to the question about how far distance-teaching methods can help towards the aim of educational expansion coupled with higher standards and more equal opportunities. This was part of the vision of people as varied as van Rensburg and Governor Lee, while the idea that mass media could help expand and improve education lies behind most of the practical work that has been done in teaching at a distance for secondary education.

The evidence is not dramatic. As we saw, distance teaching is not enormously efficient, if judged by narrow, internal, criteria: even in the apparently more successful projects like the Air Correspondence High School in South Korea, half the students did not graduate at the end of their courses. Nor is it always cheap: while the same project had costs per successful student which were 29% of the cost for orthodox schools, most others had higher relative costs. Experience so far does not suggest an easy way of providing high quality, cheap, secondary education at a distance.

On the other hand, experience shows that distance teaching has provided an education for some people who would otherwise have been deprived of it, has displayed some economies and has done something to change curricula and methods of study.

In assessing distance education there are two issues on which evidence is particularly scarce. The first is about age. It is often argued that distance learning demands motivation and self-discipline of a kind that comes only with age. On this argument, adolescents or even young adults are unlikely to succeed. If this is so, then attempts to use distance teaching for a large proportion of young people are doomed to failure. Its proper role in education is limited to teaching more mature adults.

Unfortunately we do not know whether this is the case. The British Open University was much less successful in teaching students of 18-21 than in teaching their elders. In contrast the students of the Air Correspondence High School in South Korea were prepared to work diligently. Despite a crushing timetable, with compulsory Sunday classes and broadcasts late at night and early in the morning many of

them worked through their courses successfully. The expectations which society places on 16 or 19-year-olds, and the pressures on them to achieve particular qualifications, vary from place to place and from society to society. Any general answer to questions about distance teaching for young people must take into account these cultural differences. Insofar as we can generalise, it seems likely that adolescent students need some kind of institutional framework within which to work. If we are to use distance teaching for them, we need some kind of study centres and supporting services and cannot assume that they will work effectively if left by themselves learning at home.

The second uncertainty is about curriculum. We saw in Chapter 2 that a steady line of criticism suggests that secondary curricula should be realigned to make them more practical and more closely related to community needs. With a few exceptions in Latin America, however, distance teaching has not provided that sort of curriculum. Rather, it has closely mirrored the standard curriculum of the schools. Like much school education, it has therefore, quite properly, been criticised for lending itself to rote learning of an arbitrary and over theoretical curriculum. As a result we are short of experience on distance teaching for a different kind of curriculum. And there is a particular difficulty for us here. Commonsense suggests that the more closely a school syllabus reflects the interests of its own community, the more difficult it is to ensure that mass-produced materials will fit with those interests. But distance teaching demands a large audience. If its costs are to work out right, and our students are to benefit from the economies of scale achieved by mass-producing teaching materials, then we need large numbers of students who are all following the same course. Community-based education, on the other hand, necessarily varies from one community to another. We have too little experience to be certain how far, and under what circumstances, distance-teaching materials can be adapted to the different needs of different communities. We have not yet begun to define with any precision what will be common in a community-based secondary curriculum and what will be particular and must be developed locally. All we can say is that projects like the Brigades in Botswana or village polytechnics in Kenya were teaching some subjects to their trainees where outside materials would have been valuable.

Any conclusions on the value of distance teaching for secondary education must be tempered by new evidence as it comes in on both of these issues: about the youth of students and about curriculum. At this stage we can summarise the evidence we already have and reach six preliminary conclusions.

First, distance-teaching projects have shown that it can be used, with varying success, to teach students outside school. Some of the projects

do succeed in teaching large numbers of students who would otherwise not get a secondary education. Second, it can be used to raise the quality of education in school. Third, the projects which have attempted to expand or improve education vary in quality, and we can define some of the features which mark a distance-teaching project likely to offer a better, or a worse, quality of education: that was the main theme of Chapters 4 and 5. But, fourth, out-of-school systems are usually worse, in terms of the quality of education they offer, than in-school education. They remain, at their best, second-rate. Fifth, distance teaching imposes new and unfamiliar demands on teachers. They need specialist training in the new roles they have to play as writers, broadcasters or tutors, when they are working with educational materials. Finally, some of the out-of-school distance-teaching projects are cheaper than schools; it may be possible to teach students at a distance for between a third and a half of the cost of teaching students in ordinary schools.

If this evidence is good enough to suggest that distance teaching has a permanent role to play in secondary education, rather than being a desperate response to a temporary crisis, then it suggests two alternative policies towards its use. The first is the more dramatic and the more equitable but will often be less acceptable.

If we start with the belief that an out-of-school system is worse than orthodox schools, but can be a lot better than some of the projects we have examined, there will always be problems of equity if some adolescents move into one system of education and some into another. One way of developing an equitable system of secondary education is, therefore, to suggest that all children should follow a similar pattern of secondary education, doing some of their work within a school and some outside. On this basis all children would get part of their secondary schooling at a distance and get part of it within the walls of a school. This would make it possible to expand secondary education rapidly while restraining its costs. But it would be an unpopular policy: it would be argued that society was putting at risk the education of its most able children, by deliberately offering them a worse education, in the interests of a theoretical principle of equity. If university entrance standards were to be maintained at present levels, it could also mean a lengthening of secondary education. In many countries one can assume that an alliance of politically powerful middle-class parents, who did not want their own children to go through the new system, and universities which wished to maintain the educational status quo, would prevent the reform being achieved. (The proposal has some similarities to those for educational reform in Zambia, where children were to combine work with education, which have not so far been implemented, apparently as a result of just such pressures.)

The alternative policy for distance teaching is more gradual. Such a policy might include a triple approach. The first part of the approach would be to increase the use of distance teaching within schools. The aim here would be to improve the quality of education at school, using distance teaching to extend the curriculum, to introduce new subjects, and to change styles of teaching. It might have the additional benefit of getting students used to working from materials — working in a different way that could be of long-term value to them. The second part of the approach would be to improve the quality of distance teaching outside school. As we saw in previous chapters this would demand well written correspondence courses, effective broadcasts, and good support services. In order to achieve the last of these, it might be necessary to get the regular schools to accept an increased responsibility for students outside their own walls. The effect of these two approaches would be to reduce, although not to eliminate, the difference between work in-school and work out-of-school. Children in school would get more of their education from print or from broadcasts and less instruction from teachers. They might use the same materials as those used for distance teaching outside school. Children out of school could expect more help from teachers and so would have to rely less on printed or broadcast materials.

The third part of the approach takes us back to the community. If the community became more involved in the running of a school, it would then seem more reasonable that the school should serve students both inside its walls and out. And if the school, in its turn, could look to the community for more support, and that community support could be offered also to children outside the school, then the gap between children at school and outside would, again, become a little narrower. Some of the Latin American experience with radio schools suggests that one can think of a three-cornered partnership between a distance-teaching organisation, learners, and their community.

To define the style of that partnership takes us back to questions of curriculum and into questions about local culture. A curriculum that moved some way from book learning and toward, say, the arts or village manufacture, would have appealed to reformers as different as Henry Morris and the National Christian Council of Kenya. And a curriculum of that kind could expect to find teaching resources in the community which were richer than those available in many schools. At the same time, a school that was serving external students would need to see what networks existed in the community to help it with that job. In the Canary Islands and the Dominican Republic, the formal and informal networks of the Roman Catholic church provided just such a network. In other countries, other institutions would be needed. But a shift, in using resources in the school to help those outside, and using

resources in the community to help teaching inside the school, would itself be a quiet step towards a major educational change. If, as this strategy suggests, it were to be taken by all schools, it might avoid some of the divisiveness which narrowly conceived vocational education has brought in its train. A general principle behind this strategy is, then, to shift some of the boundaries between education, work and the community.

A strategy of this kind would have two merits. First, each of the three parts of the strategy would be desirable in itself. None would achieve a revolution in education, but each could be defended on its own. And each would help some students to get more out of their education. Second, it suggests a way of expanding education of an acceptable quality while seeking the twin goals of economy and equity. The evidence is just good enough to suggest that distance teaching could play a useful part in that process. But, while there are merits in each of the three suggested approaches, if our aims include educational quality, equity and economy, then the three approaches need to go together. If we simply improve out-of-school education, but keep it detached and different from what is going on at school, it will remain a poor second-best and children going through that system will be condemned to worse educational prospects than those going to school. If we simply improve schools internally, then we should achieve a better education for the fortunate minority who are at school but, again, will do nothing for those outside. And, unless we re-examine the relationship between school learning and community needs, we are in danger of elevating a particular kind of book-learning and of increasing the social distance between the educational haves and have-nots, while setting at nought the long line of criticism of formalised secondary schooling.

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